FRDA REPORT 079

EXPECTED DELIVERED LOG COSTS FOR AREAS TREATED UNDER THE CANADA-BRITISH COLUMBIA FOREST RESOURCE DEVELOPMENT AGREEMENT

Contractor: Sterling Wood Group
264 - 2950 Douglas Street
Victoria, B.C.
V8T 4N4

Prepared for: Ministry of Forests
Industry Development and Marketing Branch
Victoria, B.C.

and

Forestry Canada
Pacific and Yukon Region
Economic Analysis Section
Victoria, B.C.

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1.0 INTRODUCTION

In September, 1988 the British Columbia Ministry of Forests together with the Canadian Forestry Service commissioned Sterling Wood Group Inc. to undertake this study.

The Canada - British Columbia Forest Resource Development Agreement (FRDA) requires that: "Canada and the Province shall jointly effect an assessment of the programs ... with regard to the stated objectives of **A Forest Sector Strategy for Canada**, the provincial forest management guidelines and this Agreement." This study forms part of and contributes to the assessment.

Funding for this study has been shared by the two signatories under the Implementation, Communications and Evaluation program within FRDA.

2.0 EXECUTIVE SUMMARY

* The study is part of the joint Canada - British Columbia assessment of FRDA programmes, required by that agreement. Project funding has been shared by both governments.

* The objective has been to develop and test a practical technique for estimating delivered log costs in British Columbia from forest stands established or treated under the FRDA programme.

* Emphasis has been to provide the practitioner an easy-to-use tool compatible with the formats of other modules, such as increase in Log Values and Biological Response Resulting from FRDA Activities.

* Data have been developed through review of the literature, use of existing manuals where applicable, first-hand knowledge of "second-growth" logging costs, in-house files and discussions and verifications with other individuals and agencies such as FERIC.

* Results are presented in both graphical and tabular form for all Forest Regions of the Province. By application of the critical factors of expected stand volume, tree size, species (in the Vancouver Forest Region only), slope and transportation configuration, the practitioner can derive delivered log costs.

* The analysis of sample results against the general results contained in the graphs and tables indicates variances of 1.8% in the Vancouver Forest Region, 0.8% in the aggregated Interior Forest Regions and no variation for the Province as a whole.

* The data are presented in a form intended for easy combination with other analytical ingredients, such as biological response and log values, to determine expected future conversion returns arising from FRDA investments.

3.0 OBJECTIVES AND REQUIREMENTS

The purpose of the study was to investigate the relationship between delivered log costs and various factors including proximity of timber to mill, terrain, accessibility and others especially as they apply to FRDA funded projects. Results from this study would lead to estimates of the current delivered log costs for each forest region, major timber type and silvicultural practice.

In order that a proper economic assessment of the value of FRDA funded projects can be made, it is important that the expected cost of delivery of the log product to the mill be estimated. An objective of this study is to provide the information needed for this component of such an assessment. It is also important that the results will be a decision-making tool to assist forest managers to select candidate areas for future funding.

Since the study results will form one module to be used with others in the economic evaluation of FRDA funding there should be logical linkages between the modules to facilitate the building of the evaluation model.

The terms of reference of the study provided four requirements:

1. A review of literature and current studies relevant to the topic.

2. Develop a methodology to determine the relative importance of all factors which contribute to the determination of delivered log costs.

3. Sample all FRDA funded projects (except surveys and prescriptions) undertaken on provincial Crown Land.

4. Estimate the delivered log cost by forest region, timber type and silvicultural practice using the samples and methodology developed.

4.0 IMPLEMENTATION

4.1 Literature Search and Review of Current Studies

This work was undertaken at the start of the project in order to ascertain the extent of work already done in this field. It was soon apparent that there are several people or bodies who have been engaged in deriving cost information for forest harvesting operations and have specialized in particular logging processes or equipment systems. In contrast to this, Valuation Division of the Ministry of Forests has been striving to develop a broad-based appraisal method of establishing expected delivered log costs.

Both types of work were useful to this study. The specialized systems studies provided points upon which we could build or confirm our own understanding of costs, while the broader Ministry information provided reliable benchmarks for several phase costs.

Many reports and papers were reviewed and information gleaned from them. Since the purpose of this study was to consolidate all of this information and cement the data together with our own knowledge and experience to provide a more general set of tables for general use, no original data from any of these reports are reproduced. Nevertheless, a bibliography of source material is provided is Appendix I.

Time was also devoted to testing the application of the Ministry of Forests stumpage appraisal system to this analysis. This is the only existing system for estimating logging costs as they vary with site specific conditions in British Columbia. However, it reflects the harvesting of old-growth timber and was found to be inappropriate for use with second-growth timber to be expected from FRDA treatment sites.

Other logging cost determination models were found to be either too restrictive for the province-wide scope of this study or were insufficiently developed for use in this project.

4.2 Development of Methodology to Determine the Relative Importance of Factors and the Generation of General Tables of Delivered Log costs

In the absence of a model suitable for the purposes of this analysis it was necessary to develop independent functions for each production phase. These were assembled from our own experience and knowledge tempered where possible by information taken from studies already done (see Appendix I).

Where stumpage appraisal data was relevant it was incorporated with the other functions. The product of these functions was a computer model which was used to generate general tree-to-truck costs by region. These are provided in section 5 as graphs and tables. The cost to transport logs to the mill is the final element in the determination of delivered cost and this is provided in separate tables (one coast and two interior). Instructions in the use of the tables are also provided in section 5.

Costs of logs are sensitive to many factors which can be classified into several categories including:

* Physical properties of the trees (dimensions, defectiveness, limbiness, density and species);

* Location of the stand (terrain, slope, proximity to existing roads, camps, log dumps and mills);

* Operation and administrative requirements: (development required, ecological protection measures, seasonal requirements and scaling of logs).

One objective of this analysis was to produce a practical tool for the determination of delivered log costs from any FRDA treated area in British Columbia. This implies the use of simple look-up tables requiring a minimum of extra calculations and extrapolations. In order to achieve this however, it was necessary to aggregate the effects of many of the separate factors and use regional averages. Despite this there are several key ingredient factors which we determined should not be aggregated but be used by the practitioner in determining a delivered log cost. They are:

1. Forest region.
2. Average stand volume per hectare at harvest.
3a. Average tree size at harvest (for interior regions).
3b. Average diameter at breast height (for Vancouver region).
4. Average slope percent.
5. Haul distance from stand to destination.
6. Round trip truck haul cycle time.
7. Truck configuration (highway or off-highway).
8. Barging costs (where applicable).
9. Towing costs (where applicable).

These nine factors are individual elements which should be known to the practitioner. An estimate must be made of the biological response that is likely to result from the FRDA activity so that the tree size and stand volume figures can be determined. This is the subject of another FRDA study. Other factors which have a lesser impact on log cost have been aggregated or averaged by region. Examples are scaling

and administrative expenses which vary comparatively little. The effect of species on the delivered log cost was found to be negligible for interior regions and so for these regions there has been no attempt to report the costs using this criterion. This has helped to keep the tabulations down to a reasonable size. The product is a series of tables which provide the tree-to-truck costs for all combinations of the first four elements. The tables were constructed from an array of benchmark conditions for which tree-to-truck costs were known, and by development of regression formulas by fitting curves to these benchmark points.

The remaining five factors are elements in the determination of the cost of transporting loaded logs to the destination. Once again, some elements must first be determined by the user prior to using the system. For the Vancouver region haul distance is needed for the trucking element and the origin code, as listed in the coast appraisal manual, is needed for the barging and towing costs. For interior regions, haul distance, cycle time and truck configuration must be known.

In order to carry out the aggregations and to develop the formulas, several assumptions were made. They are described here so that adjustments may be made by the user to specific cases exhibiting conditions which might be outside the norm.

i Delivered log costs are expressed in 1988 dollars. Most of the monetary values used reflect 1986 levels, but, with unit costs of logging having remained very steady over the past 3 to 5 years, they have not been inflated by application of any indices such as the Implicit Price Index.

ii There was no attempt to introduce a technology improvement factor to account for expected cost efficiencies that may result from the development of more cost efficient machinery and methods that may be employed in the future. In realistic terms cost estimates are therefore probably conservative.

iii Trucking, dumping, sorting and booming, plus towing and barging costs were derived from Ministry of Forests Coast and Interior stumpage appraisal manuals.

iv Development costs were also estimated as a function of currently experienced costs as reflected in the Coast and Interior stumpage appraisal manuals, but adjusted to reflect second growth logging conditions where development would consist of re-opening areas that had been logged at some previous time.

v Overhead was estimated as a function of current overhead costs adjusted for factors pertinent to second growth logging (e.g. a reduced requirement for infrastructure to managed areas already developed).

vi Existing road systems built to access the areas now logged and now bearing stands established or treated under FRDA will be available when the new crop matures. A development cost which allows for re-opening of these old roads has been included in the cost estimates. All FRDA treatment sites were assumed to be reasonably accessible at the time of the next harvest and so no attempt was made to apply any arbitrary main access development costs.

vii The amount of the adjustment made to development costs to account for reopening of roads varies with region and site conditions.

viii The length of road required to develop an area was determined by using the generally accepted factor of .05 kilometres per hectare of developed forest, but this was modified slightly to allow for a greater or lesser road requirement depending upon average slope of the terrain.

ix Some parameters which affect costs were set arbitrarily. For instance crew transportation costs on the coast were based upon a commuting distance of 30 km. This, and some other distance figures, are averages which were obtained as spinoff data available from a distance criterion study also conducted by Sterling Wood Group.

x Costs were derived for slopes up to 50% in the interior and 60% in the Vancouver region. Examination of the history records data base shows that 98% of the stand tending projects and 88% of the planting projects carried out under FRDA were below these slope limits.

Once the cost tables had been prepared, selected cost information was sent to several people in the forest industry familiar with the cost of logging second growth wood. They all confirmed that the figures lay within their bounds of expectation.

4.3 Sampling of FRDA Funded Projects

A sample of silvicultural projects under FRDA was obtained from the Ministry of Forests history records data base maintained by the Silviculture Branch. All survey and

prescription projects were excluded, and so the samples were categorized as backlog planting or stand tending.

The purpose of this sampling exercise was firstly, to provide a basis for determining some regional average values (some distance parameters have already been alluded to in the previous section) and secondly, to provide a check for the results obtained from the methodology used to generate the general cost tables.

439 samples were drawn from the history record data base. These were made up of 207 planting and 232 stand tending projects representing 10 percent of the total population of 4360 FRDA projects. In fact the sample was drawn in such a way that 10 percent of the eligible projects from each district would be sampled. Thus every district was represented with the exception of Cassiar which had no FRDA projects recorded.

Only part of the necessary information could be provided by the history records, the rest had to be obtained from local knowledge available only from the Ministry of Forests district offices. A questionnaire was devised and the relevant data merged from the computer data base containing the samples into each questionnaire sheet. These were then distributed to the district offices for confirmation of the data already attached and addition of the missing data needed for further work. Appendix II contains a blank copy of the questionnaire for reference purposes.

439 questionnaires were distributed to 42 district offices and a total of 357 responses (82%) were returned. Only three districts (Fort Nelson, Lakes and Campbell River) failed to respond at all, while several others returned most but not all the questionnaires sent to them. Data from the responses was used to create a new data base file containing site specific information about each sample treatment site which could be used to derive delivered log costs for a range of possible mature timber stands pertinent to the site and the treatment provided. The stand volume and tree size characteristics will vary depending on the biological response that occurs following silvicultural treatments. The range used is expected to cover most response expectations.

The next stage in the process involved the adaptation of the general log cost computer model described earlier to provide cost estimates for each sample site. In this case, however, it was possible to utilize a considerable quantity of site specific data giving a higher degree of confidence to the results. As with the general model, the sample model included variants to account for specific regional differences. Of course, the determination of delivered log

costs requires that a mature harvestable stand be present. Since all the samples are of newly planted or young immature stands it was necessary to provide a range of results that might be expected at the time of harvest. The computer model was forced to repeat the cost calculation several times, each time using a different assumption for mature stand volume, average mature tree size (dbh for Vancouver region, volume for interior regions), and slope percent. In this way a table was constructed for each sample showing the cost per cubic metre at each assumption level.

For the purposes of the presentation of this report the sample results were later aggregated by region and are presented in Section 5.2. Individual sample reports were also prepared but were not attached to this report due to their bulk. They are available separately.

5.0 RESULTS

5.1 General Tables of Delivered Log Costs

Notes on use of the tables

STEP ONE: Tree-to-truck Costs

In order to determine the expected tree-to-truck cost (in 1988 dollars) for a stand of timber treated under FRDA the following parameters must first be determined or estimated:

a) Forest region.
b) Major species in the stand (Vancouver region only).
c) Volume per hectare of the stand at harvesting age.
d) Tree size (dbh for Vancouver region, tree volume for interior regions).
e) Average slope percent for the ground on which the stand grows.

By applying each of those parameters in turn, the appropriate table can be found and then the appropriate line and column read to find the estimated tree-to-truck costs.

STEP TWO: Transportation Costs

In the Vancouver region where transportation usually entails the movement of logs first by truck and then by water, two sets of information are required to arrive at a log transportation cost estimate.

The first is the one-way haul distance which is used to directly read the corresponding cost from the log truck-haul cost, and the second is the point of origin for either towing booms or barging. Again, armed with this knowledge, the user can read the corresponding cost directly from the table. These costs are borrowed without modification from the Ministry of Forests Coast Appraisal Manual.

For application to interior FRDA projects only truck transportation is considered. Unlike the table for the Vancouver region the table is split according to the two major truck configurations: highway or off-highway. The user must therefore know which configuration is most likely to apply, and he must also estimate the one-way haul distance and the full trip cycle time. Looking up these parameters in the appropriate table will provide the estimated transportation costs.

Transportation cost tables are found immediately following the general tree-to-truck cost tables.

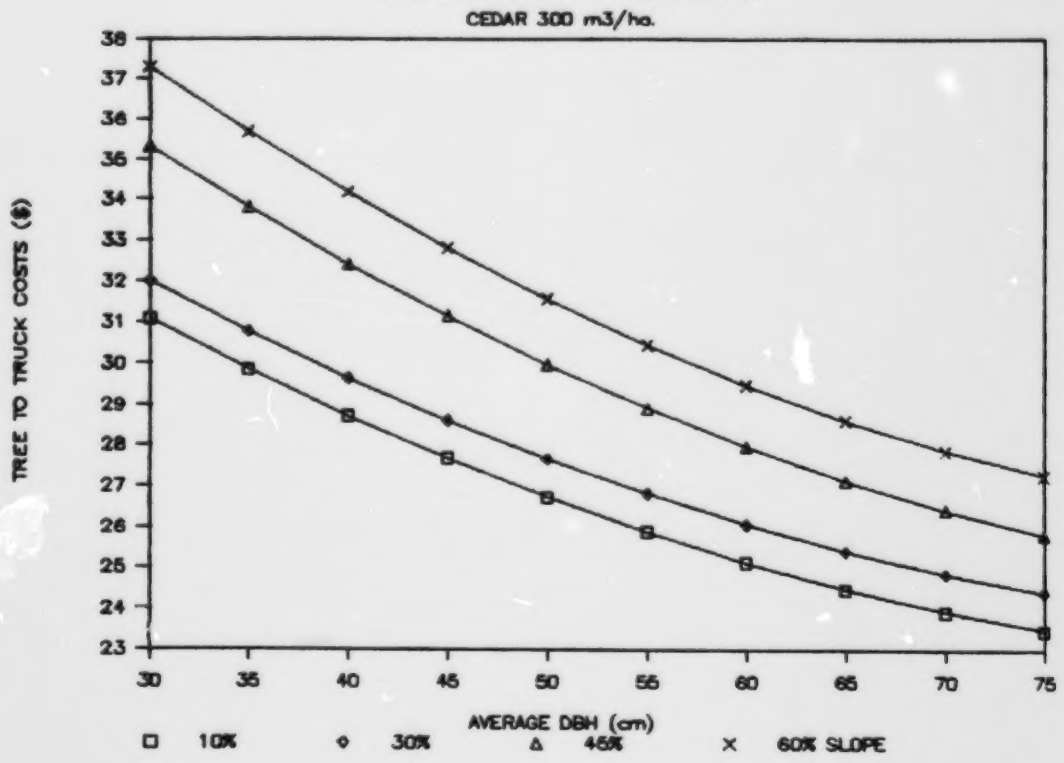
STEP THREE: Delivered Log Costs

In most instances the estimate of delivered log cost will be the sum of the tree-to-truck cost and the transportation cost. In some cases there may be a need to apply a further additive to reflect some particular extra cost. Examples of this could be the necessity to use a lake tow or to build a bridge. Any such additive cost is best provided by the user and can simply be added as a cost expressed in dollars per cubic metre.

The tree-to-truck cost tables are laid out in order, by region and each page is devoted to a particular stand volume. The user may use either the graph or the table to read off the appropriate cost.

The transportation cost tables follow behind the tree-to-truck cost tables, and are also arranged by region.

VANCOUVER REGION

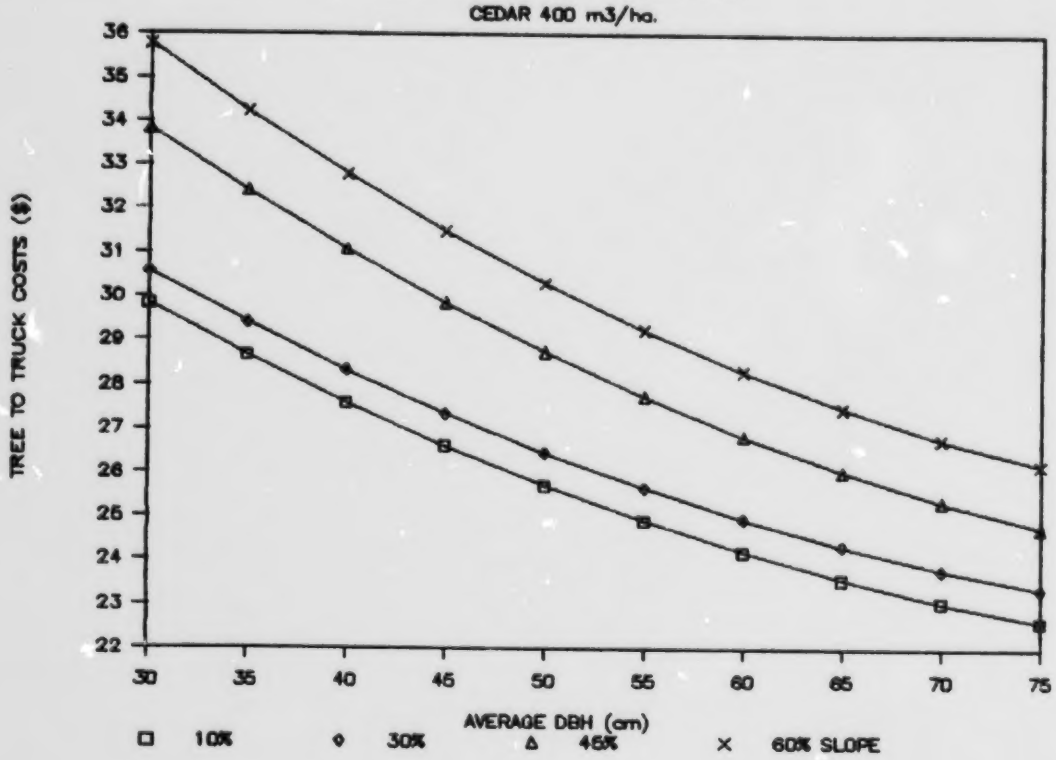


TREE-TO-TRUCK COSTS

CEDAR 300 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$31.04	$31.10	$32.00	$35.32	$37.30
35	$29.81	$29.87	$30.77	$33.82	$35.68
40	$28.68	$28.73	$29.63	$32.42	$34.19
45	$27.64	$27.70	$28.60	$31.15	$32.82
50	$26.70	$26.76	$27.66	$29.98	$31.58
55	$25.86	$25.92	$26.82	$28.92	$30.46
60	$25.11	$25.17	$26.07	$27.98	$29.48
65	$24.46	$24.52	$25.42	$27.15	$28.62
70	$23.91	$23.97	$24.87	$26.43	$27.88
75	$23.46	$23.51	$24.41	$25.82	$27.28

VANCOUVER REGION

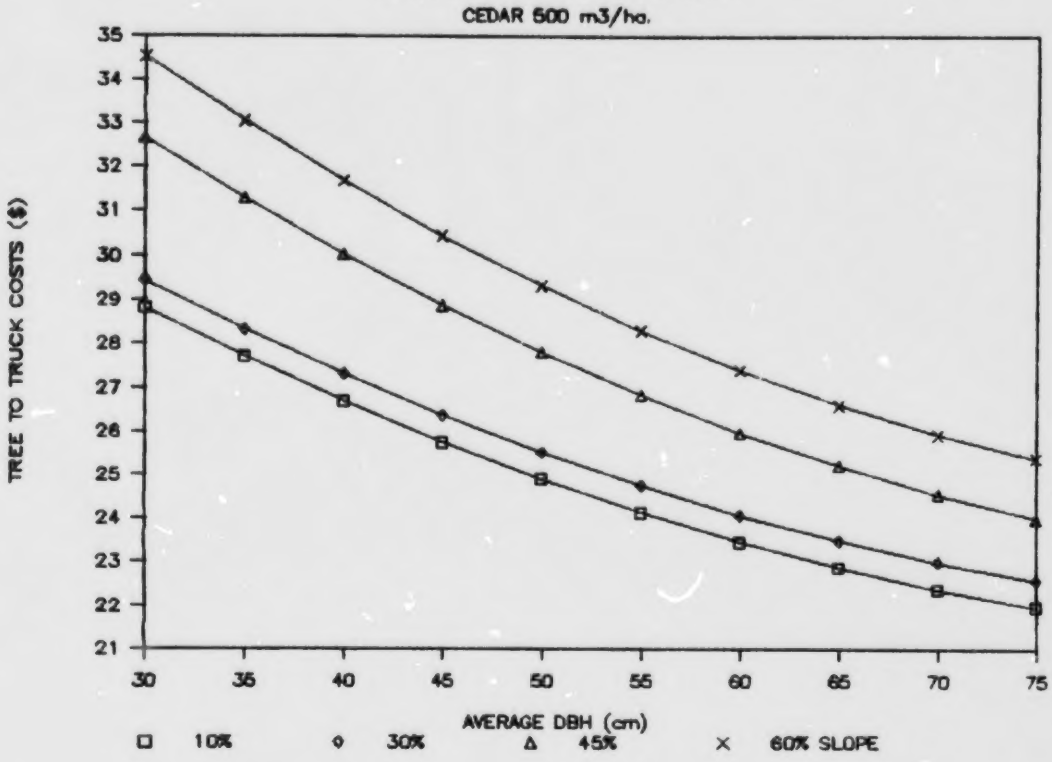


TREE-TO-TRUCK COSTS

CEDAR 400 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$29.82	$29.86	$30.58	$33.84	$35.77
35	$28.64	$28.68	$29.40	$32.40	$34.22
40	$27.57	$27.61	$28.33	$31.07	$32.79
45	$26.58	$26.62	$27.34	$29.85	$31.49
50	$25.68	$25.72	$26.44	$28.74	$30.30
55	$24.88	$24.92	$25.64	$27.73	$29.24
60	$24.17	$24.21	$24.93	$26.82	$28.29
65	$23.56	$23.60	$24.32	$26.03	$27.47
70	$23.03	$23.07	$23.79	$25.34	$26.77
75	$22.60	$22.64	$23.36	$24.76	$26.19

VANCOUVER REGION

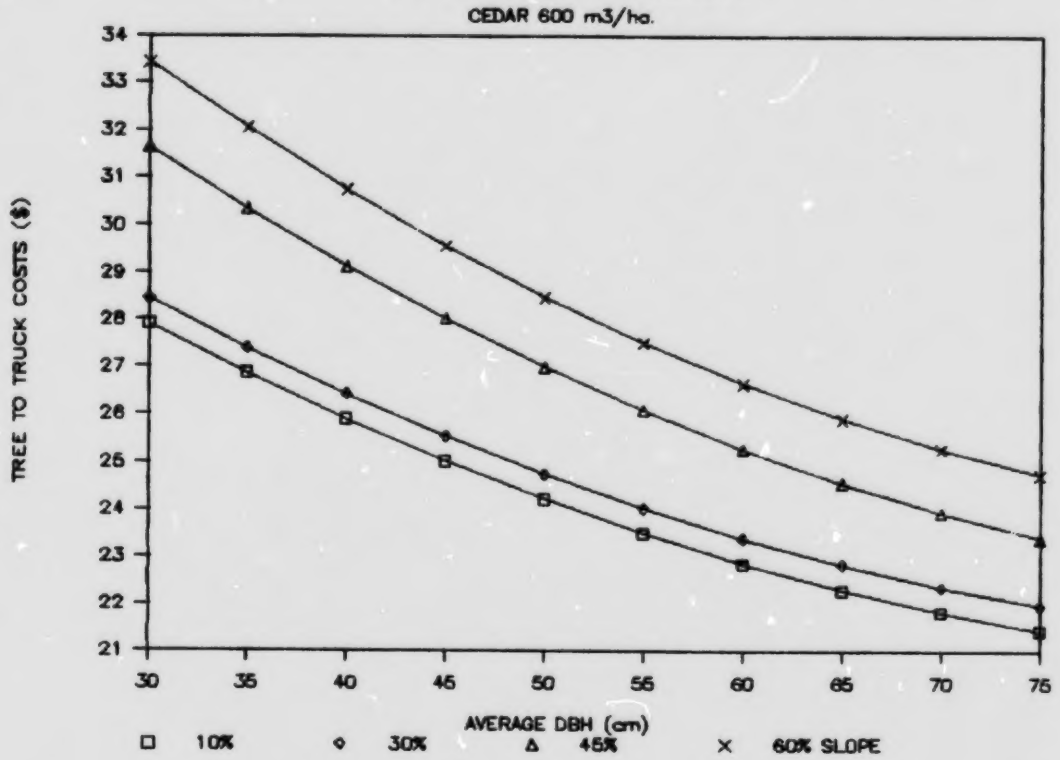


TREE-TO-TRUCK COSTS

CEDAR 500 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$28.81	$28.83	$29.44	$32.66	$34.53
35	$27.70	$27.72	$28.32	$31.29	$33.05
40	$26.67	$26.70	$27.30	$30.02	$31.69
45	$25.73	$25.76	$26.36	$28.86	$30.44
50	$24.89	$24.91	$25.51	$27.79	$29.31
55	$24.13	$24.15	$24.75	$26.83	$28.29
60	$23.45	$23.48	$24.08	$25.97	$27.39
65	$22.87	$22.89	$23.49	$25.21	$26.61
70	$22.37	$22.40	$23.00	$24.56	$25.94
75	$21.96	$21.99	$22.59	$24.00	$25.39

VANCOUVER REGION

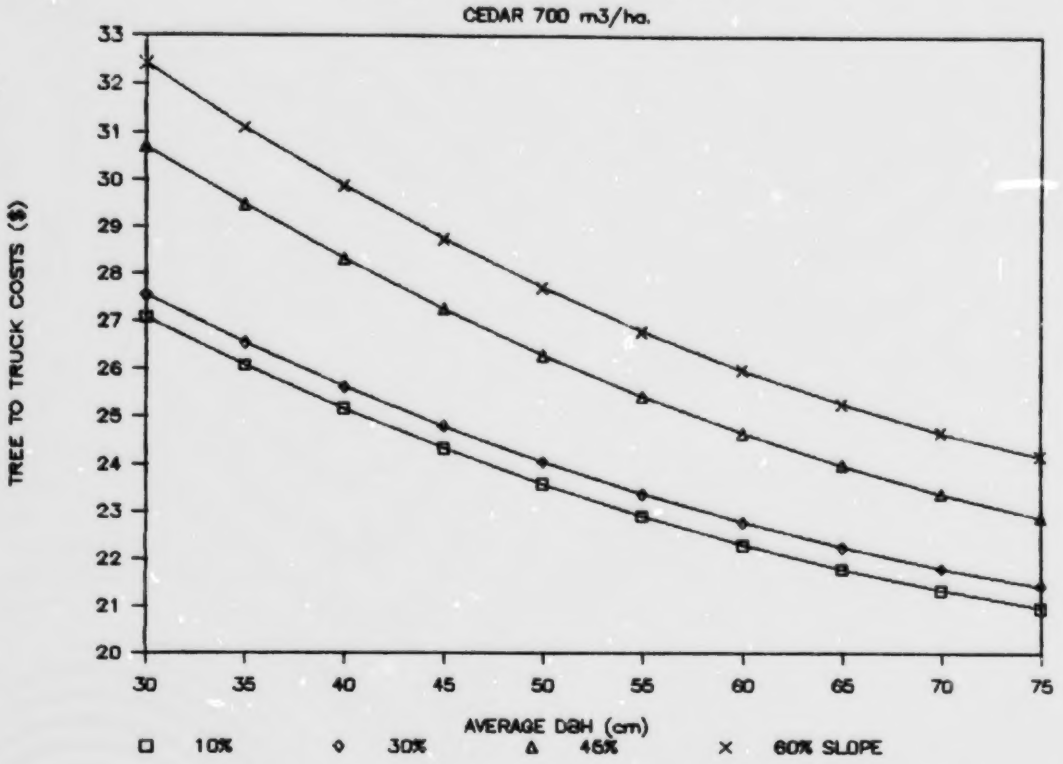


TREE-TO-TRUCK COSTS

CEDAR 600 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$27.90	$27.93	$28.45	$31.63	$33.44
35	$26.85	$26.88	$27.39	$30.33	$32.03
40	$25.88	$25.91	$26.42	$29.12	$30.74
45	$24.99	$25.02	$25.54	$28.02	$29.55
50	$24.19	$24.22	$24.73	$27.00	$28.48
55	$23.47	$23.50	$24.01	$26.09	$27.51
60	$22.83	$22.86	$23.38	$25.27	$26.65
65	$22.28	$22.31	$22.82	$24.55	$25.91
70	$21.81	$21.84	$22.35	$23.92	$25.27
75	$21.42	$21.46	$21.97	$23.39	$24.74

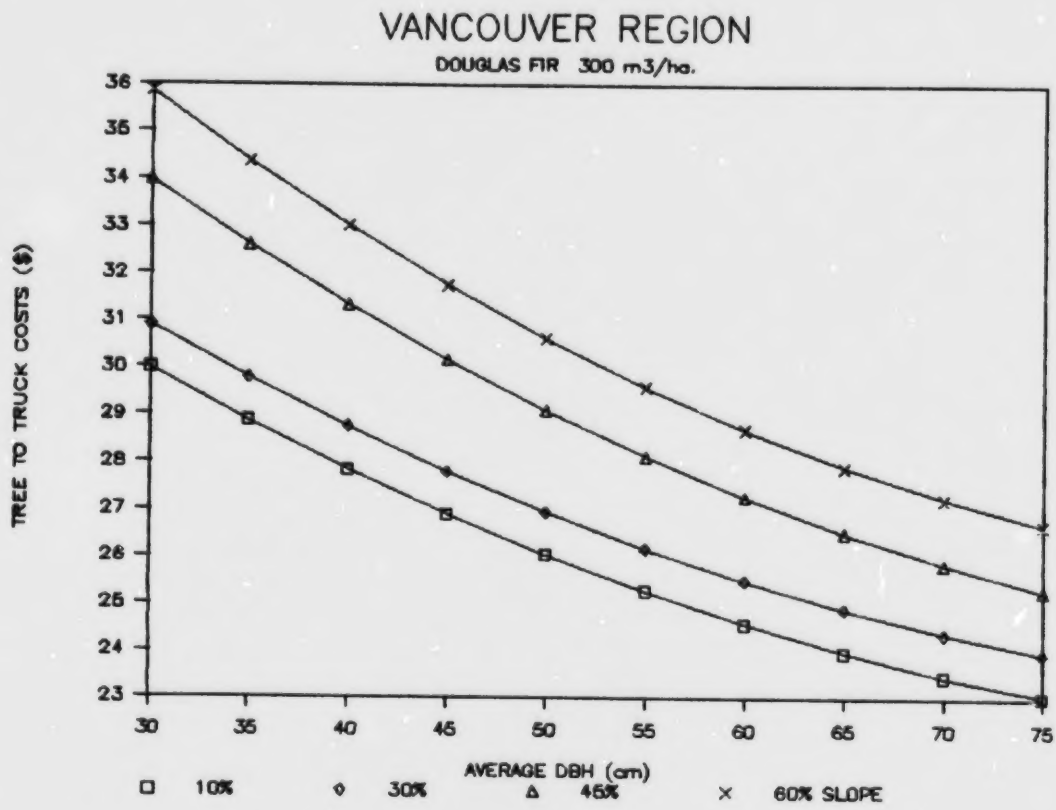
VANCOUVER REGION



TREE-TO-TRUCK COSTS

CEDAR 700 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$27.07	$27.09	$27.54	$30.70	$32.43
35	$26.07	$26.10	$26.55	$29.46	$31.10
40	$25.16	$25.18	$25.63	$28.32	$29.87
45	$24.32	$24.34	$24.79	$27.27	$28.74
50	$23.56	$23.59	$24.04	$26.30	$27.72
55	$22.88	$22.91	$23.36	$25.44	$26.80
60	$22.28	$22.31	$22.76	$24.66	$25.99
65	$21.76	$21.79	$22.24	$23.97	$25.28
70	$21.32	$21.35	$21.80	$23.38	$24.67
75	$20.96	$20.98	$21.44	$22.87	$24.17

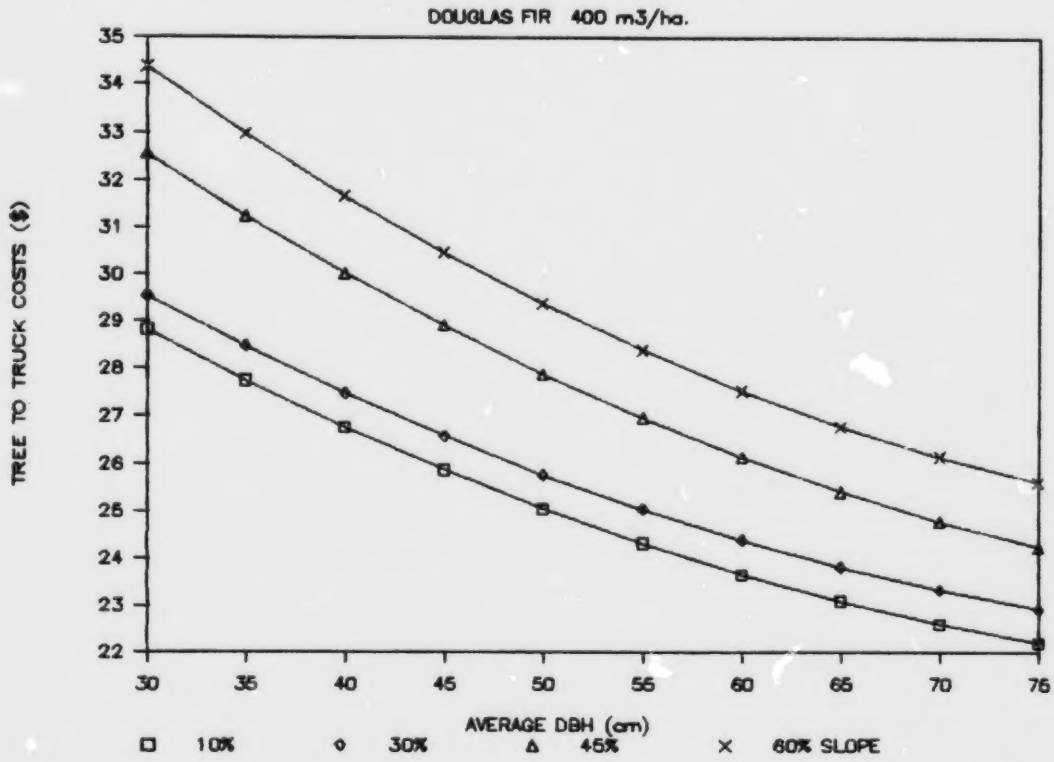


TREE-TO-TRUCK COSTS

DOUGLAS-FIR 300 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$29.96	$30.02	$30.90	$33.97	$35.85
35	$28.84	$28.90	$29.77	$32.60	$34.37
40	$27.80	$27.86	$28.74	$31.33	$33.00
45	$26.86	$26.91	$27.79	$30.16	$31.75
50	$25.99	$26.05	$26.93	$29.09	$30.62
55	$25.22	$25.28	$26.16	$28.13	$29.60
60	$24.54	$24.59	$25.47	$27.26	$28.69
65	$23.94	$24.00	$24.88	$26.50	$27.91
70	$23.43	$23.49	$24.37	$25.84	$27.23
75	$23.01	$23.07	$23.95	$25.28	$26.68

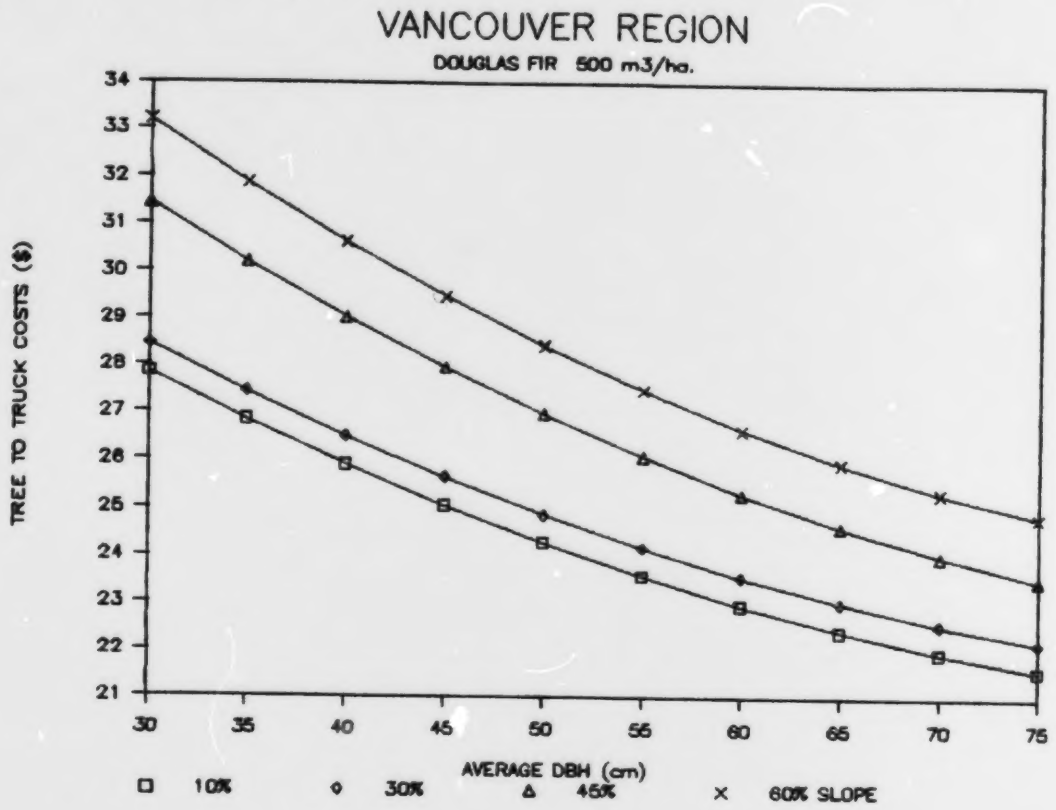
VANCOUVER REGION



TREE-TO-TRUCK COSTS

DOUGLAS-FIR 400 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$28.80	$28.84	$29.54	$32.55	$34.38
35	$27.73	$27.77	$28.47	$31.24	$32.97
40	$26.74	$26.78	$27.48	$30.03	$31.66
45	$25.84	$25.88	$26.58	$28.91	$30.47
50	$25.02	$25.06	$25.76	$27.89	$29.38
55	$24.28	$24.32	$25.02	$26.96	$28.41
60	$23.63	$23.67	$24.37	$26.14	$27.54
65	$23.06	$23.10	$23.80	$25.41	$26.79
70	$22.58	$22.62	$23.32	$24.78	$26.15
75	$22.18	$22.22	$22.92	$24.24	$25.61

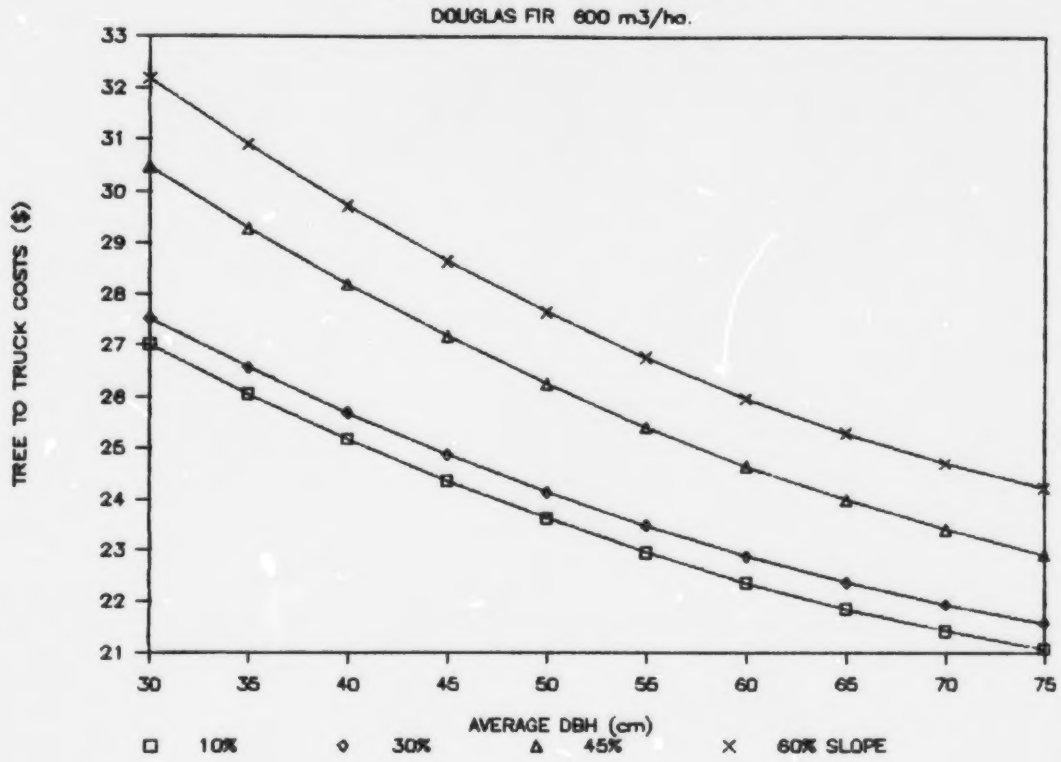


TREE-TO-TRUCK COSTS

DOUGLAS-FIR 500 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$27.85	$27.87	$28.46	$31.43	$33.20
35	$26.83	$26.86	$27.44	$30.18	$31.86
40	$25.89	$25.92	$26.50	$29.03	$30.61
45	$25.04	$25.06	$25.64	$27.96	$29.47
50	$24.26	$24.28	$24.87	$26.99	$28.44
55	$23.56	$23.58	$24.17	$26.11	$27.51
60	$22.94	$22.97	$23.55	$25.32	$26.68
65	$22.41	$22.43	$23.01	$24.62	$25.96
70	$21.95	$21.97	$22.56	$24.02	$25.35
75	$21.57	$21.59	$22.18	$23.51	$24.84

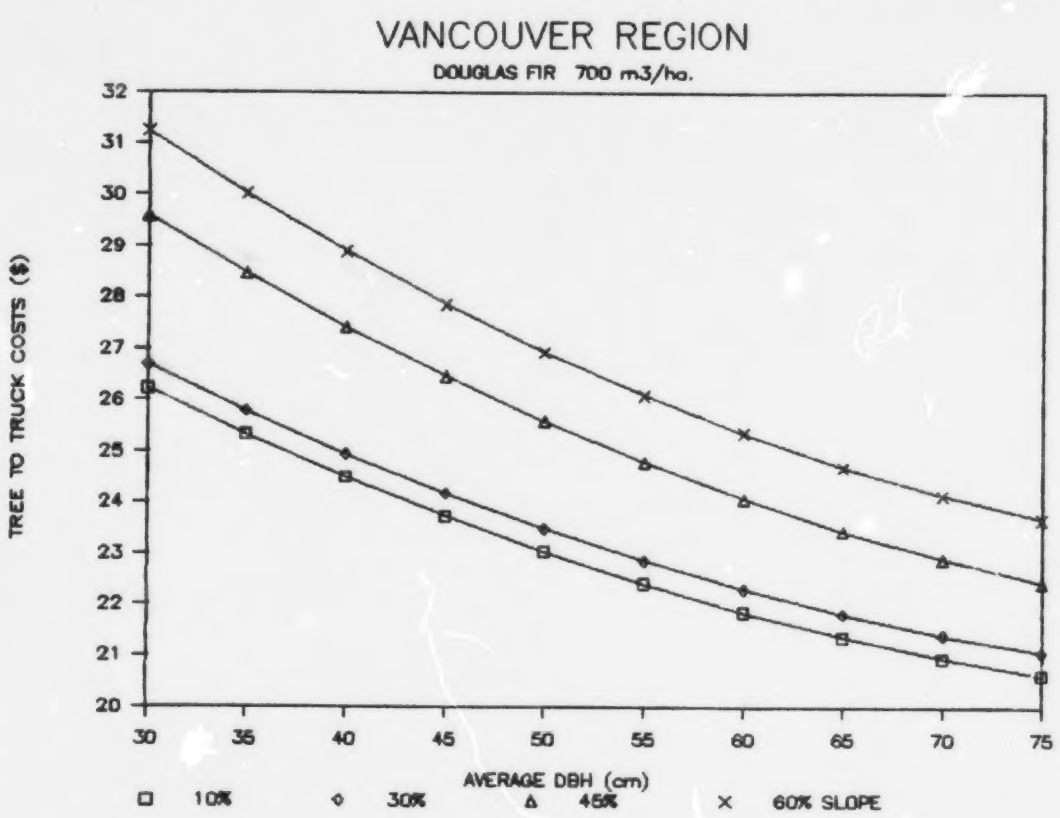
VANCOUVER REGION



TREE-TO-TRUCK COSTS

DOUGLAS-FIR 600 m3/ha.

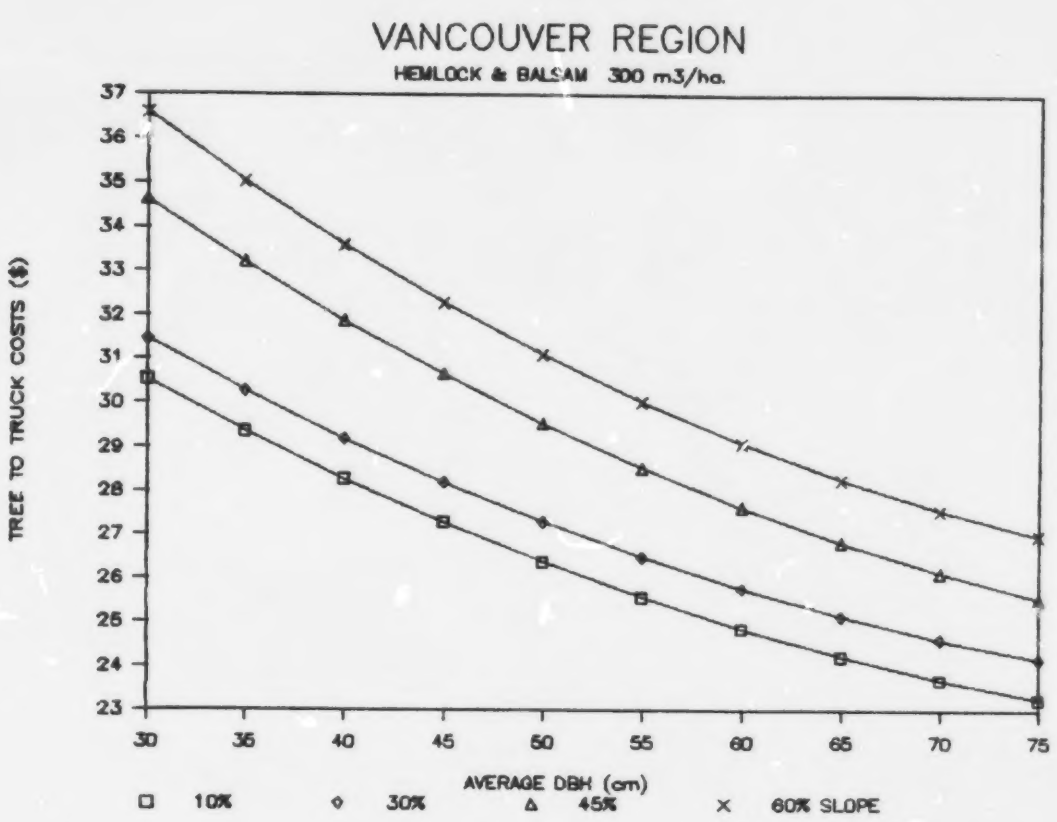
Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$27.00	$27.03	$27.53	$30.47	$32.18
35	$26.03	$26.07	$26.56	$29.28	$30.90
40	$25.15	$25.18	$25.68	$28.18	$29.71
45	$24.33	$24.37	$24.86	$27.16	$28.63
50	$23.60	$23.63	$24.13	$26.24	$27.65
55	$22.94	$22.97	$23.47	$25.40	$26.76
60	$22.35	$22.39	$22.88	$24.65	$25.98
65	$21.85	$21.88	$22.37	$23.99	$25.29
70	$21.41	$21.45	$21.94	$23.41	$24.71
75	$21.06	$21.09	$21.59	$22.92	$24.22



TREE-TO-TRUCK COSTS

DOUGLAS-FIR 700 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$26.22	$26.25	$26.69	$29.60	$31.24
35	$25.31	$25.34	$25.77	$28.47	$30.02
40	$24.47	$24.50	$24.94	$27.42	$28.90
45	$23.71	$23.73	$24.17	$26.46	$27.87
50	$23.01	$23.04	$23.47	$25.58	$26.93
55	$22.39	$22.42	$22.85	$24.78	$26.09
60	$21.84	$21.87	$22.30	$24.07	$25.35
65	$21.36	$21.39	$21.82	$23.44	$24.70
70	$20.95	$20.98	$21.41	$22.89	$24.14
75	$20.62	$20.64	$21.08	$22.43	$23.68

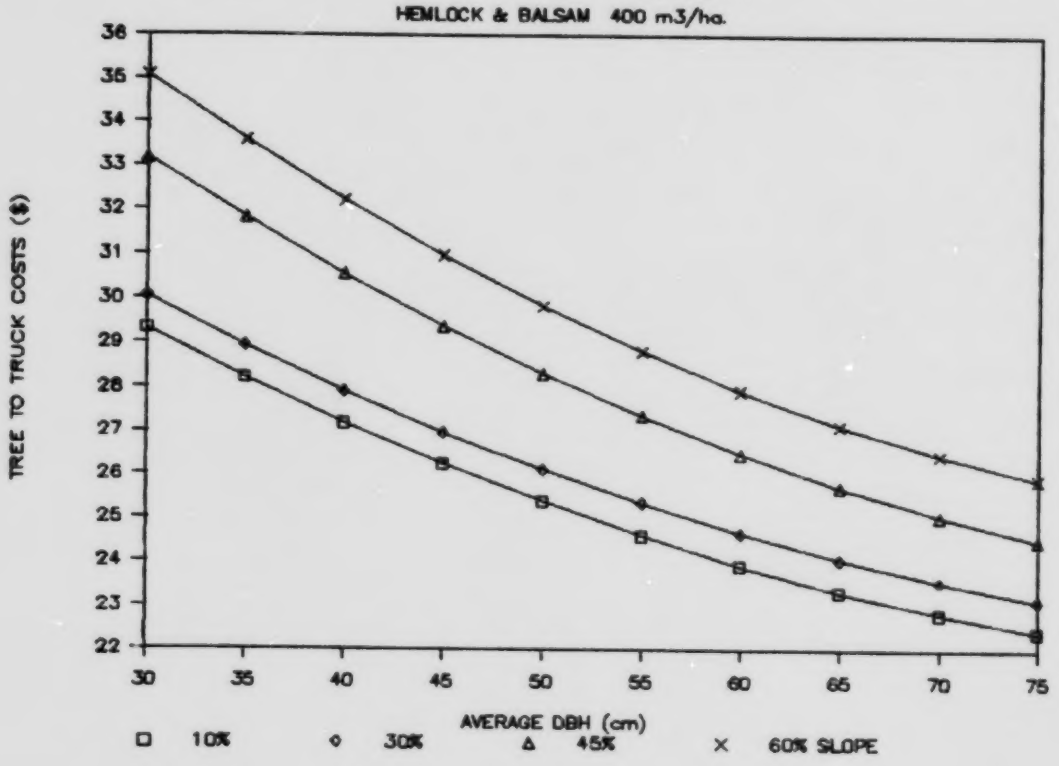


TREE-TO-TRUCK COSTS

HEMLOCK & BALSAM 300 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$30.50	$30.56	$31.45	$34.64	$36.58
35	$29.33	$29.38	$30.27	$33.21	$35.02
40	$28.24	$28.30	$29.19	$31.88	$33.59
45	$27.25	$27.31	$28.19	$30.65	$32.29
50	$26.35	$26.41	$27.29	$29.53	$31.10
55	$25.54	$25.60	$26.49	$28.52	$30.03
60	$24.83	$24.88	$25.77	$27.62	$29.09
65	$24.20	$24.26	$25.15	$26.82	$28.26
70	$23.67	$23.73	$24.62	$26.13	$27.56
75	$23.23	$23.29	$24.18	$25.55	$26.98

VANCOUVER REGION

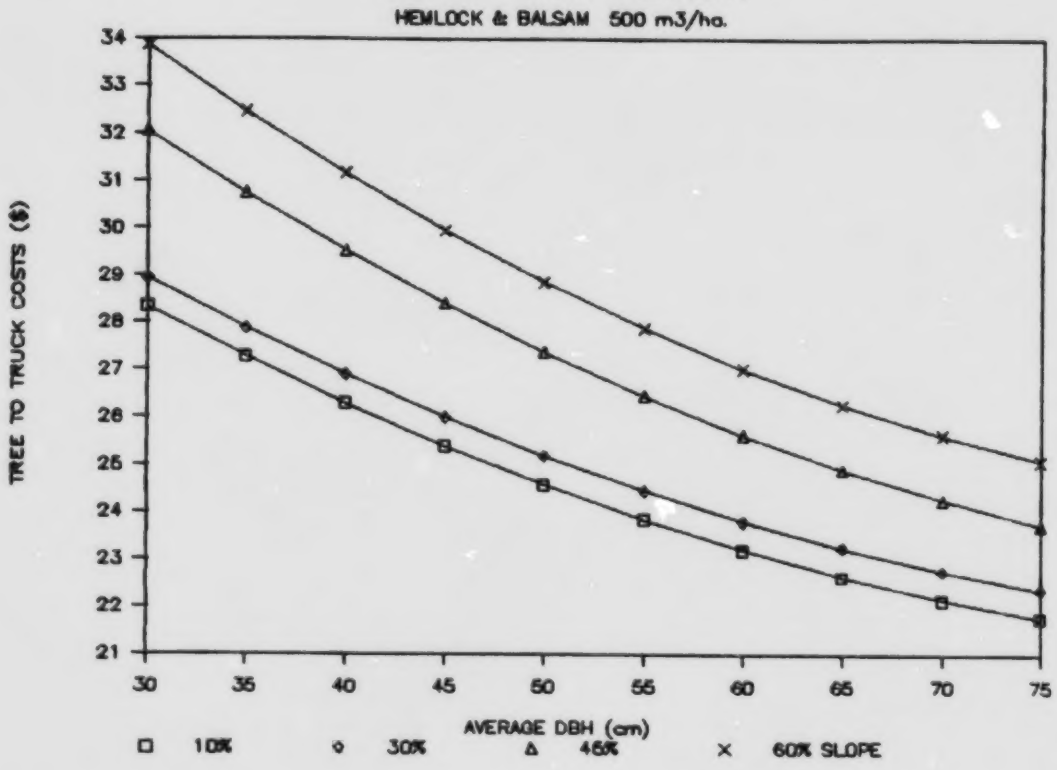


TREE-TO-TRUCK COSTS

HEMLOCK & BALSAM 400 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$29.31	$29.35	$30.06	$33.19	$35.08
35	$28.19	$28.23	$28.93	$31.82	$33.59
40	$27.15	$27.19	$27.90	$30.55	$32.23
45	$26.21	$26.25	$26.96	$29.38	$30.98
50	$25.35	$25.39	$26.10	$28.31	$29.84
55	$24.58	$24.62	$25.33	$27.35	$28.82
60	$23.90	$23.94	$24.65	$26.48	$27.92
65	$23.31	$23.35	$24.06	$25.72	$27.13
70	$22.81	$22.85	$23.56	$25.06	$26.46
75	$22.39	$22.43	$23.14	$24.50	$25.90

VANCOUVER REGION

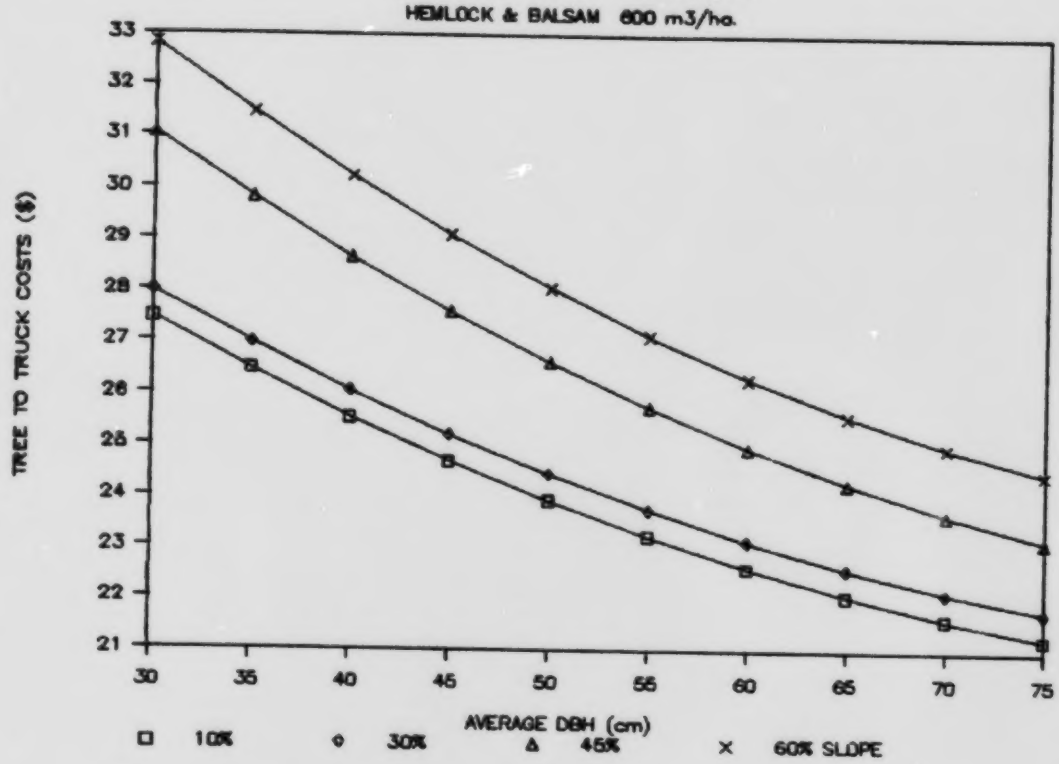


TREE-TO-TRUCK COSTS

HEMLOCK & BALSAM 500 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$28.33	$28.35	$28.95	$32.05	$33.87
35	$27.26	$27.29	$27.88	$30.74	$32.45
40	$26.28	$26.31	$26.90	$29.52	$31.15
45	$25.39	$25.41	$26.00	$28.41	$29.96
50	$24.57	$24.60	$25.19	$27.39	$28.87
55	$23.84	$23.87	$24.46	$26.47	$27.90
60	$23.20	$23.22	$23.82	$25.64	$27.04
65	$22.64	$22.66	$23.25	$24.92	$26.29
70	$22.16	$22.18	$22.78	$24.29	$25.64
75	$21.77	$21.79	$22.38	$23.75	$25.11

VANCOUVER REGION

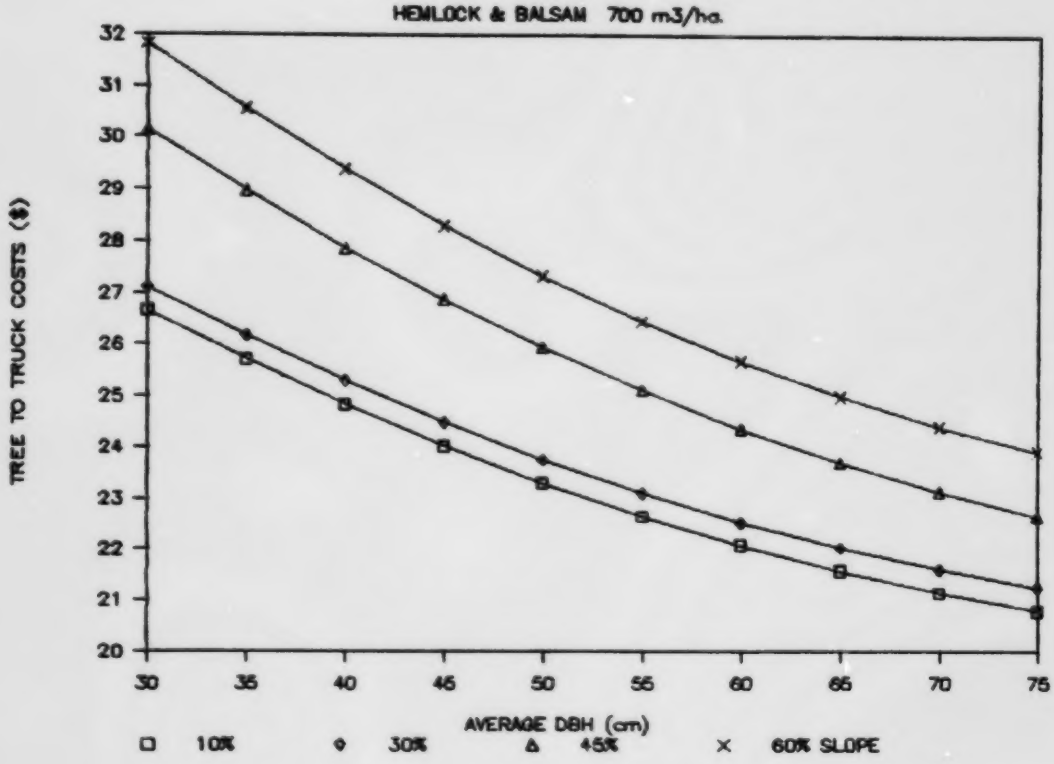


TREE-TO-TRUCK COSTS

HEMLOCK & BALSAM 600 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$27.45	$27.48	$27.99	$31.05	$32.81
35	$26.44	$26.47	$26.98	$29.80	$31.47
40	$25.51	$25.54	$26.05	$28.65	$30.23
45	$24.66	$24.70	$25.20	$27.59	$29.09
50	$23.89	$23.93	$24.43	$26.62	$28.06
55	$23.20	$23.24	$23.74	$25.74	$27.13
60	$22.59	$22.63	$23.13	$24.96	$26.31
65	$22.06	$22.09	$22.60	$24.27	$25.60
70	$21.61	$21.64	$22.15	$23.67	$24.99
75	$21.24	$21.27	$21.78	$23.16	$24.48

VANCOUVER REGION

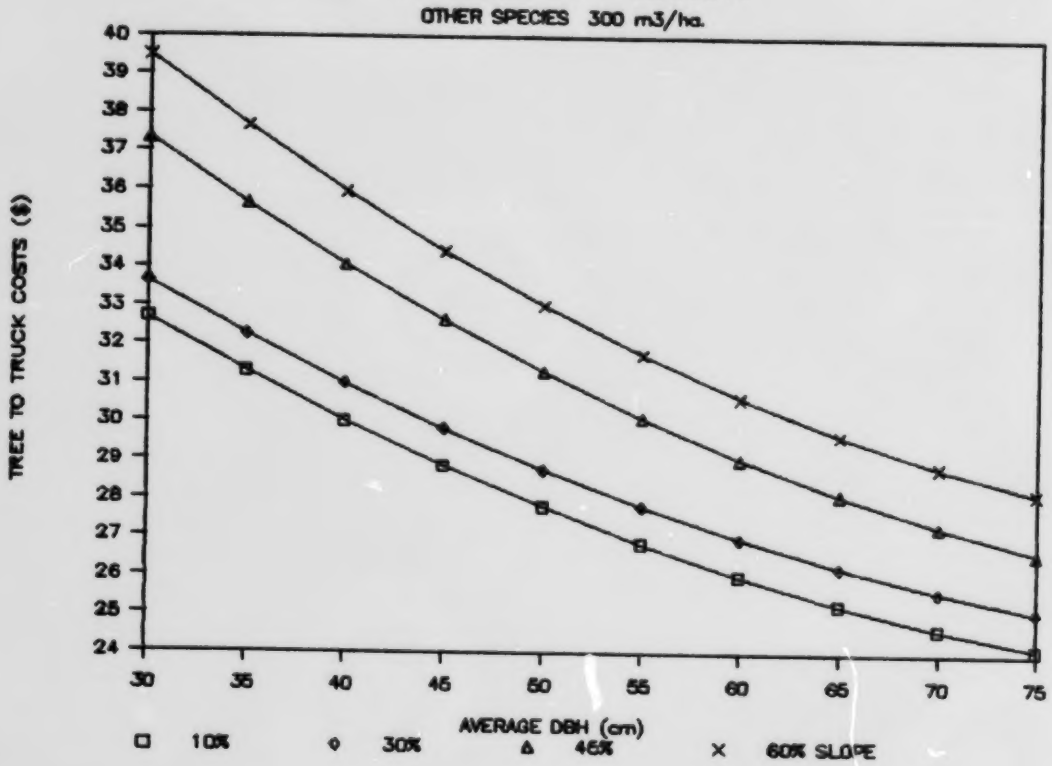


TREE-TO-TRUCK COSTS

HEMLOCK & BALSAM 700 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$26.65	$26.67	$27.11	$30.15	$31.83
35	$25.69	$25.72	$26.16	$28.96	$30.56
40	$24.82	$24.84	$25.28	$27.87	$29.38
45	$24.01	$24.04	$24.48	$26.86	$28.30
50	$23.29	$23.31	$23.76	$25.94	$27.33
55	$22.64	$22.66	$23.10	$25.11	$26.45
60	$22.06	$22.09	$22.53	$24.36	$25.67
65	$21.56	$21.59	$22.03	$23.71	$24.99
70	$21.14	$21.16	$21.61	$23.14	$24.41
75	$20.79	$20.81	$21.26	$22.65	$23.92

VANCOUVER REGION

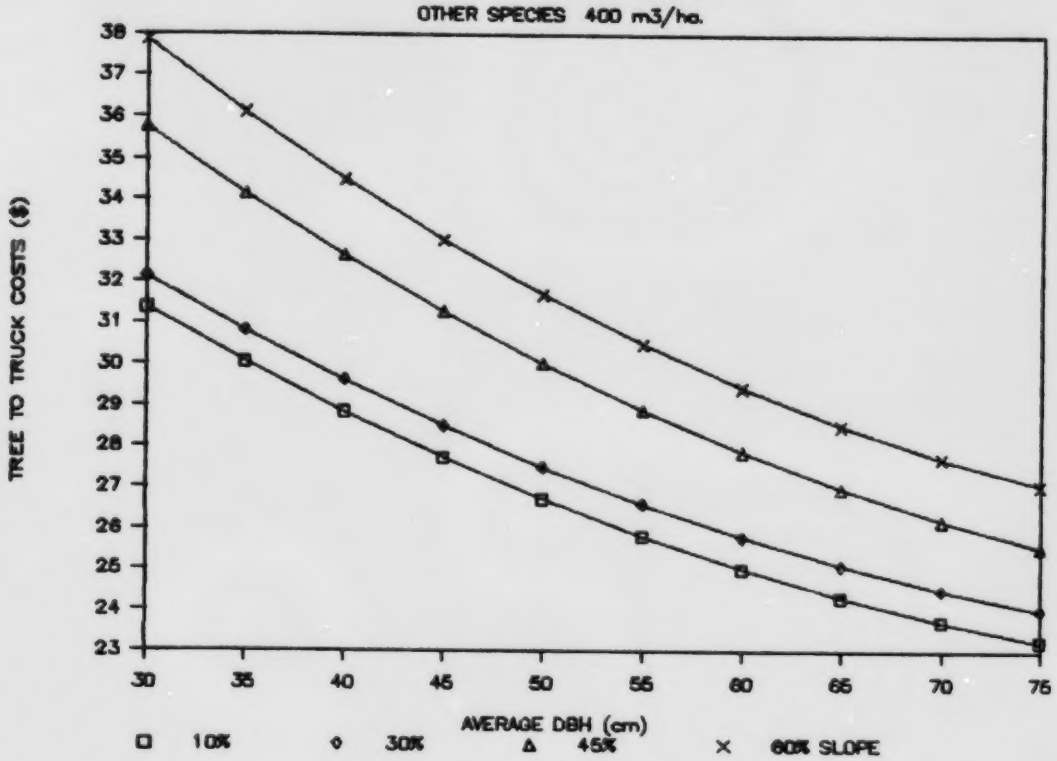


TREE-TO-TRUCK COSTS

OTHER SPECIES 300 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$32.66	$32.71	$33.64	$37.34	$39.49
35	$31.27	$31.32	$32.26	$35.64	$37.66
40	$29.99	$30.05	$30.98	$34.07	$35.97
45	$28.82	$28.88	$29.81	$32.63	$34.42
50	$27.76	$27.82	$28.75	$31.31	$33.02
55	$26.82	$26.87	$27.80	$30.12	$31.76
60	$25.98	$26.03	$26.97	$29.06	$30.65
65	$25.25	$25.31	$26.24	$28.12	$29.68
70	$24.63	$24.69	$25.62	$27.32	$28.86
75	$24.12	$24.18	$25.11	$26.64	$28.18

VANCOUVER REGION

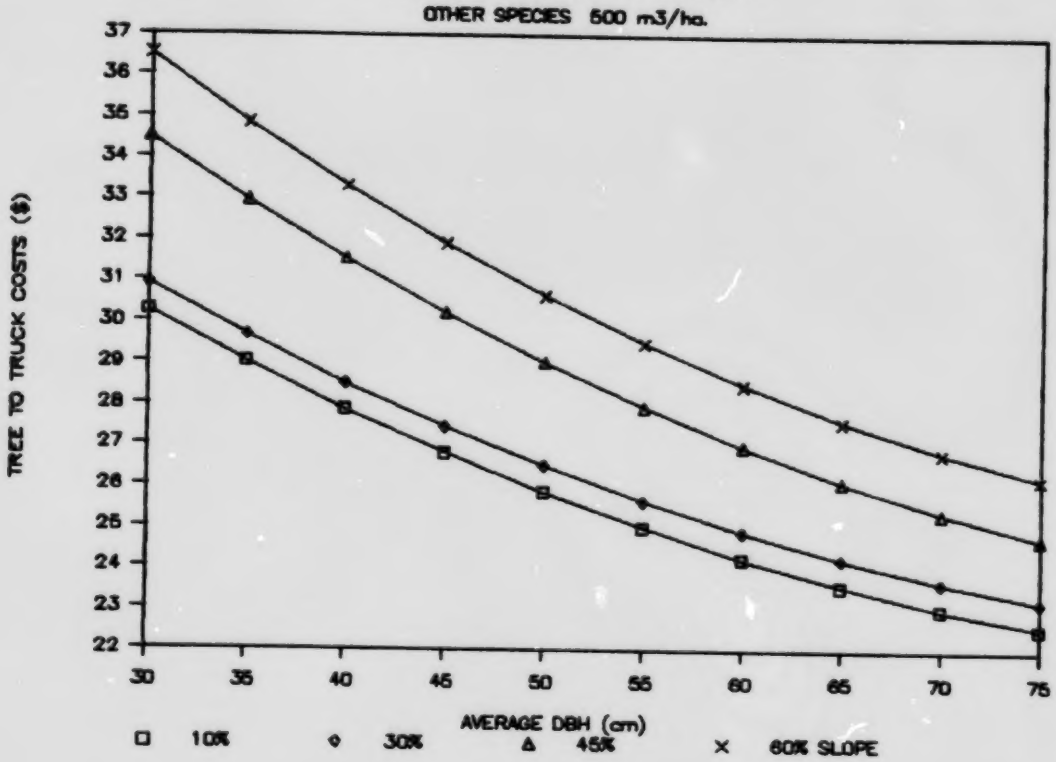


TREE-TO-TRUCK COSTS

OTHER SPECIES 400 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$31.34	$31.38	$32.13	$35.77	$37.86
35	$30.02	$30.06	$30.81	$34.14	$36.11
40	$28.80	$28.84	$29.59	$32.64	$34.49
45	$27.69	$27.73	$28.48	$31.26	$33.01
50	$26.69	$26.73	$27.48	$30.01	$31.68
55	$25.78	$25.82	$26.57	$28.87	$30.48
60	$24.99	$25.03	$25.78	$27.85	$29.41
65	$24.30	$24.34	$25.09	$26.96	$28.49
70	$23.71	$23.75	$24.50	$26.19	$27.70
75	$23.23	$23.27	$24.02	$25.54	$27.05

VANCOUVER REGION

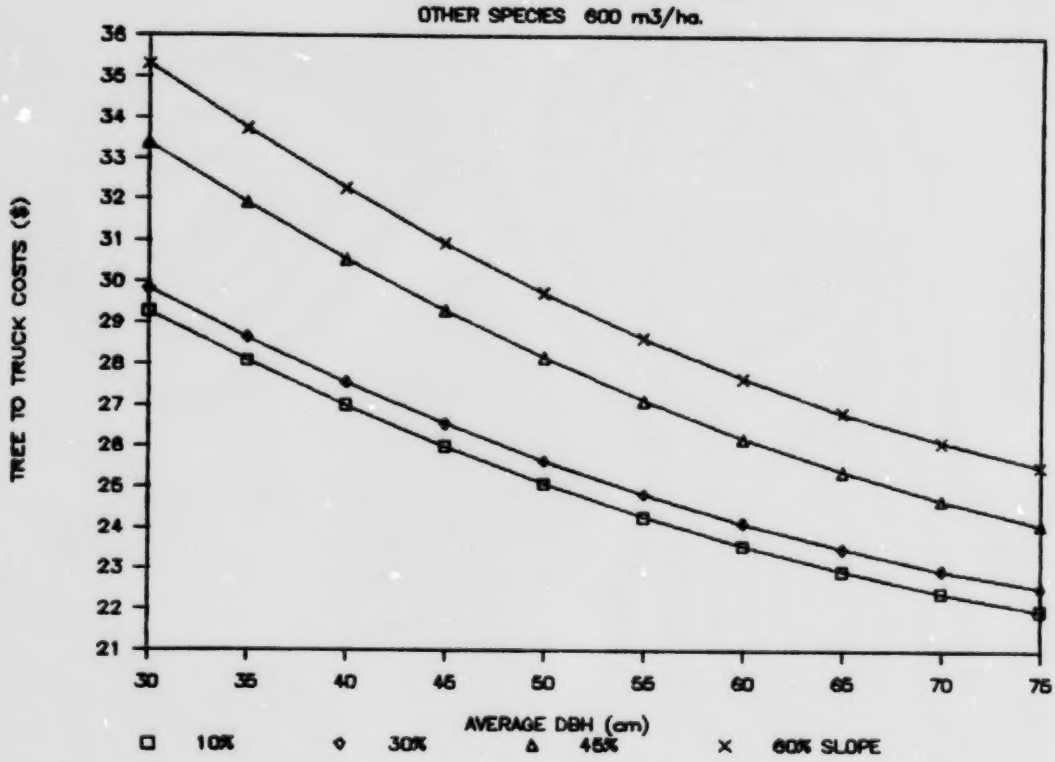


TREE-TO-TRUCK COSTS

OTHER SPECIES 500 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$30.25	$30.27	$30.90	$34.50	$36.51
35	$28.99	$29.02	$29.65	$32.95	$34.84
40	$27.84	$27.86	$28.49	$31.52	$33.31
45	$26.78	$26.81	$27.44	$30.20	$31.90
50	$25.83	$25.85	$26.48	$29.00	$30.62
55	$24.97	$25.00	$25.63	$27.92	$29.48
60	$24.22	$24.24	$24.87	$26.95	$28.46
65	$23.56	$23.59	$24.22	$26.10	$27.58
70	$23.01	$23.03	$23.66	$25.36	$26.83
75	$22.55	$22.58	$23.21	$24.74	$26.21

VANCOUVER REGION

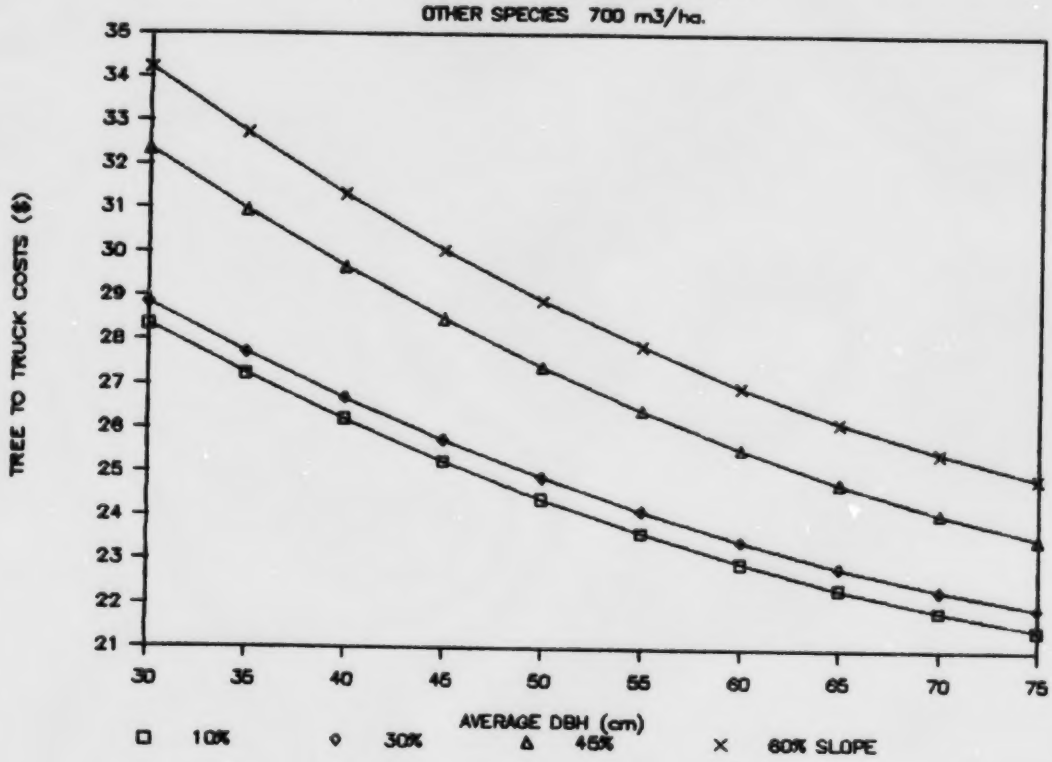


TREE-TO-TRUCK COSTS

OTHER SPECIES 600 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$29.25	$29.29	$29.82	$33.38	$35.33
35	$28.06	$28.10	$28.64	$31.91	$33.74
40	$26.97	$27.00	$27.54	$30.55	$32.27
45	$25.97	$26.01	$26.54	$29.29	$30.94
50	$25.07	$25.10	$25.64	$28.15	$29.72
55	$24.26	$24.29	$24.83	$27.12	$28.63
60	$23.54	$23.58	$24.12	$26.20	$27.67
65	$22.93	$22.96	$23.50	$25.39	$26.83
70	$22.40	$22.44	$22.97	$24.69	$26.11
75	$21.97	$22.01	$22.54	$24.09	$25.52

VANCOUVER REGION

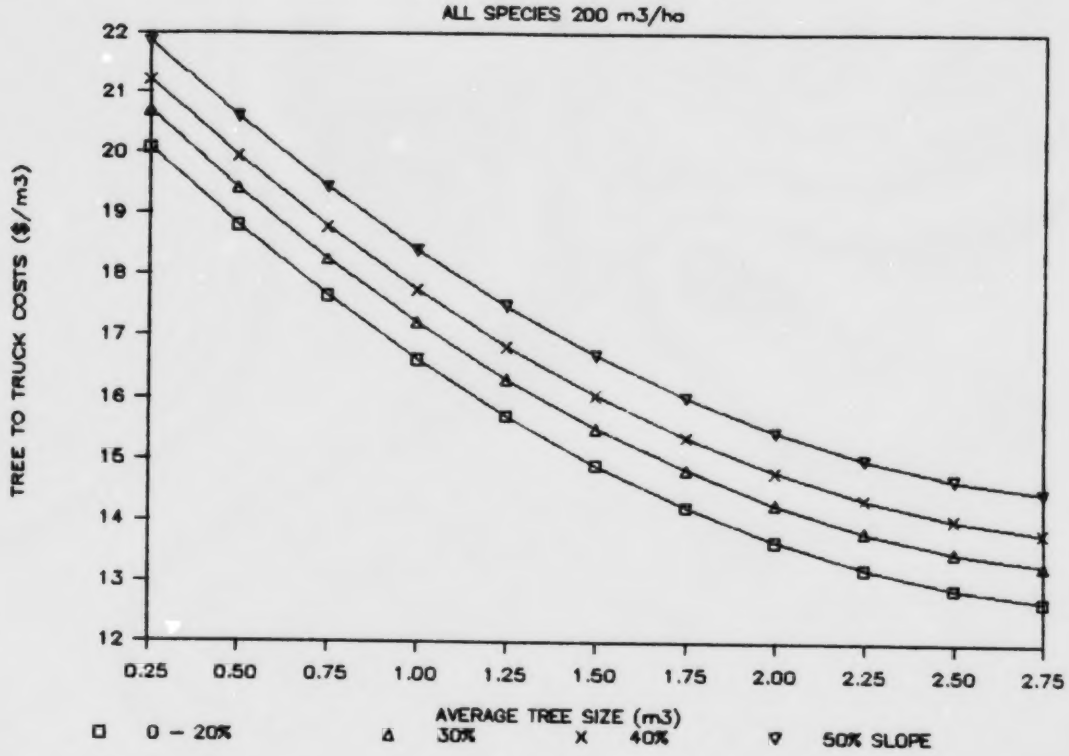


TREE-TO-TRUCK COSTS

OTHER SPECIES 700 m3/ha.

Average dbh (cm)	Average Slope (%)				
	0	15	30	45	60
30	$28.33	$28.36	$28.83	$32.35	$34.22
35	$27.21	$27.24	$27.71	$30.96	$32.71
40	$26.18	$26.20	$26.68	$29.66	$31.32
45	$25.24	$25.26	$25.73	$28.48	$30.05
50	$24.38	$24.41	$24.88	$27.39	$28.90
55	$23.62	$23.65	$24.12	$26.42	$27.87
60	$22.95	$22.97	$23.45	$25.54	$26.95
65	$22.37	$22.39	$22.86	$24.77	$26.15
70	$21.87	$21.90	$22.37	$24.10	$25.47
75	$21.47	$21.50	$21.97	$23.54	$24.91

CARIBOO REGION

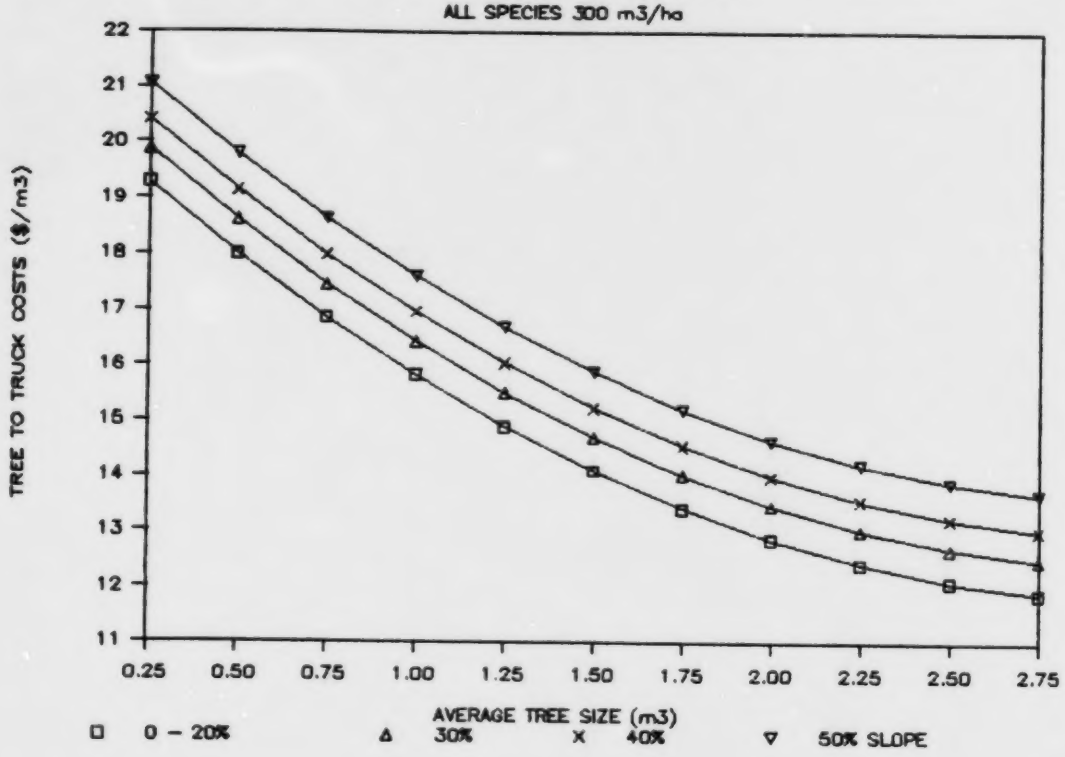


TREE-TO-TRUCK COSTS

Volume per hectare 200 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$20.11	$20.07	$20.05	$20.68	$21.21	$21.86
0.50	$18.84	$18.80	$18.77	$19.41	$19.94	$20.59
0.75	$17.68	$17.65	$17.62	$18.25	$18.78	$19.44
1.00	$16.65	$16.61	$16.59	$17.22	$17.75	$18.40
1.25	$15.73	$15.70	$15.67	$16.30	$16.83	$17.49
1.50	$14.94	$14.90	$14.87	$15.51	$16.04	$16.69
1.75	$14.26	$14.22	$14.20	$14.83	$15.36	$16.01
2.00	$13.70	$13.66	$13.64	$14.27	$14.80	$15.45
2.25	$13.26	$13.22	$13.20	$13.83	$14.36	$15.01
2.50	$12.94	$12.90	$12.87	$13.51	$14.04	$14.69
2.75	$12.73	$12.70	$12.67	$13.30	$13.83	$14.49

CARIBOO REGION



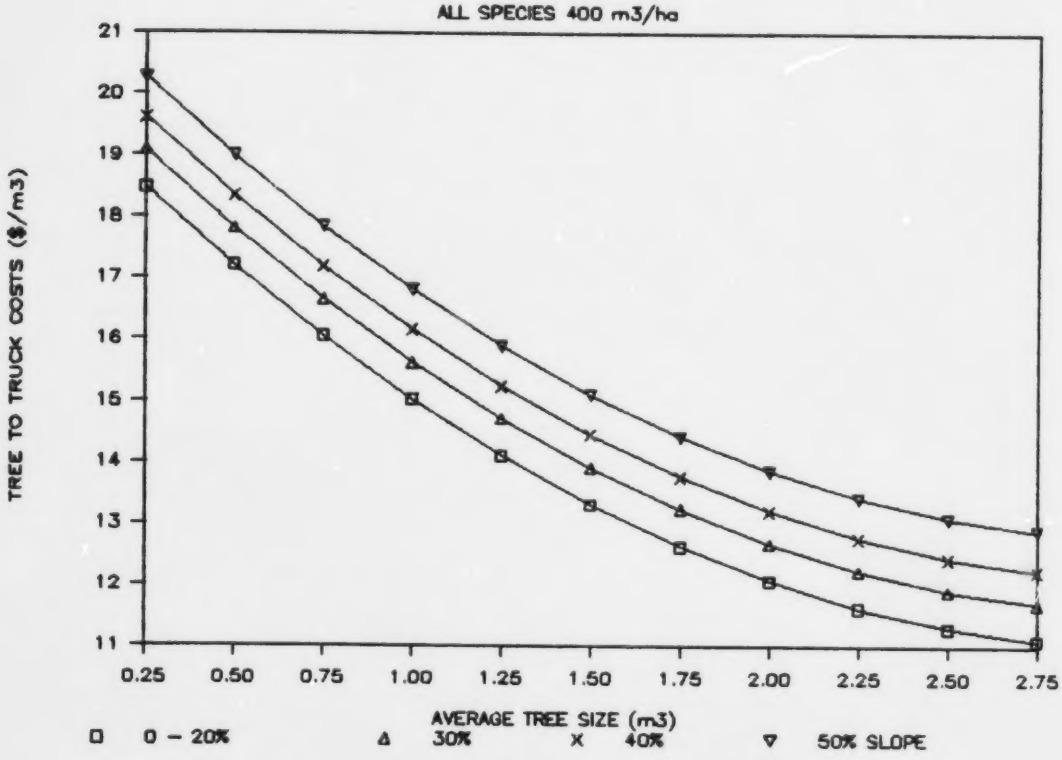
TREE-TO-TRUCK COSTS

Volume per hectare 300 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$19.31	$19.27	$19.25	$19.88	$20.41	$21.06
0.50	$18.04	$18.00	$17.97	$18.61	$19.14	$19.79
0.75	$16.88	$16.85	$16.82	$17.45	$17.98	$18.64
1.00	$15.85	$15.81	$15.79	$16.42	$16.95	$17.60
1.25	$14.93	$14.90	$14.87	$15.50	$16.03	$16.69
1.50	$14.14	$14.10	$14.07	$14.71	$15.24	$15.89
1.75	$13.46	$13.42	$13.40	$14.03	$14.56	$15.21
2.00	$12.90	$12.86	$12.84	$13.47	$14.00	$14.65
2.25	$12.46	$12.42	$12.40	$13.03	$13.56	$14.21
2.50	$12.14	$12.10	$12.07	$12.71	$13.24	$13.89
2.75	$11.93	$11.90	$11.87	$12.50	$13.03	$13.69

CARIBOO REGION

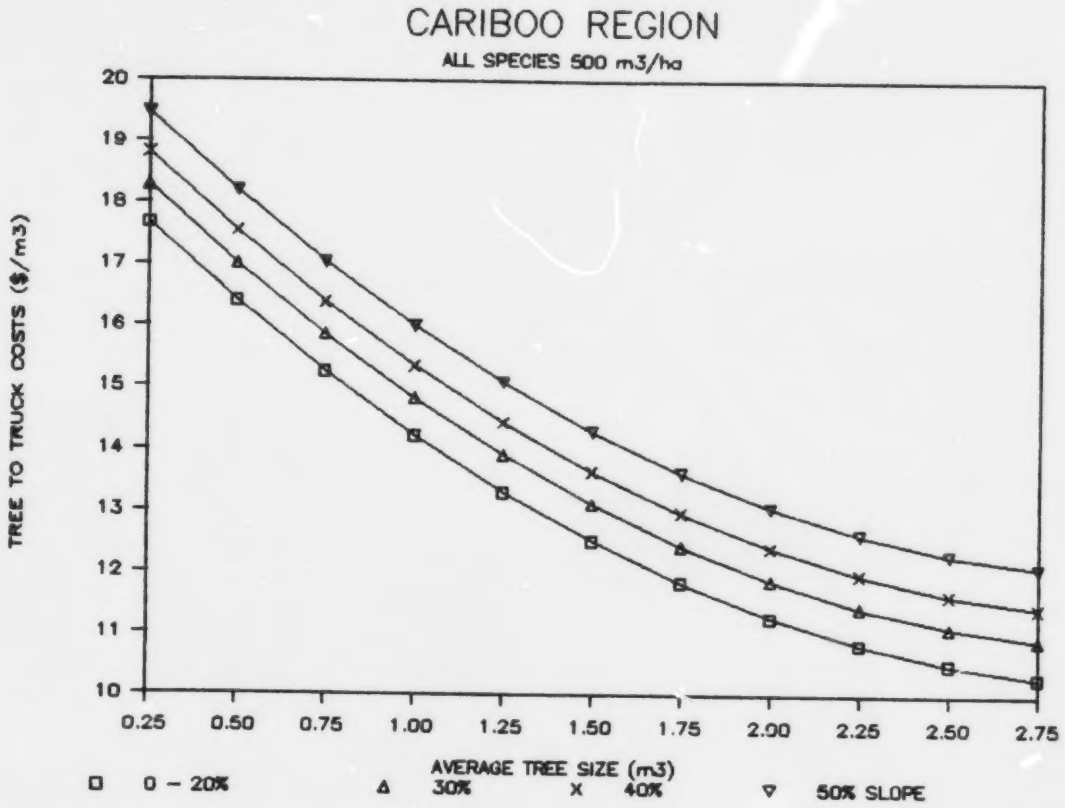
ALL SPECIES 400 m3/ha



TREE-TO-TRUCK COSTS

Volume per hectare 400 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$18.51	$18.47	$18.45	$19.08	$19.61	$20.26
0.50	$17.24	$17.20	$17.17	$17.81	$18.34	$18.99
0.75	$16.08	$16.05	$16.02	$16.65	$17.18	$17.84
1.00	$15.05	$15.01	$14.99	$15.62	$16.15	$16.80
1.25	$14.13	$14.10	$14.07	$14.70	$15.23	$15.89
1.50	$13.34	$13.30	$13.27	$13.91	$14.44	$15.09
1.75	$12.66	$12.62	$12.60	$13.23	$13.76	$14.41
2.00	$12.10	$12.06	$12.04	$12.67	$13.20	$13.85
2.25	$11.66	$11.62	$11.60	$12.23	$12.76	$13.41
2.50	$11.34	$11.30	$11.27	$11.91	$12.44	$13.09
2.75	$11.13	$11.10	$11.07	$11.70	$12.23	$12.89



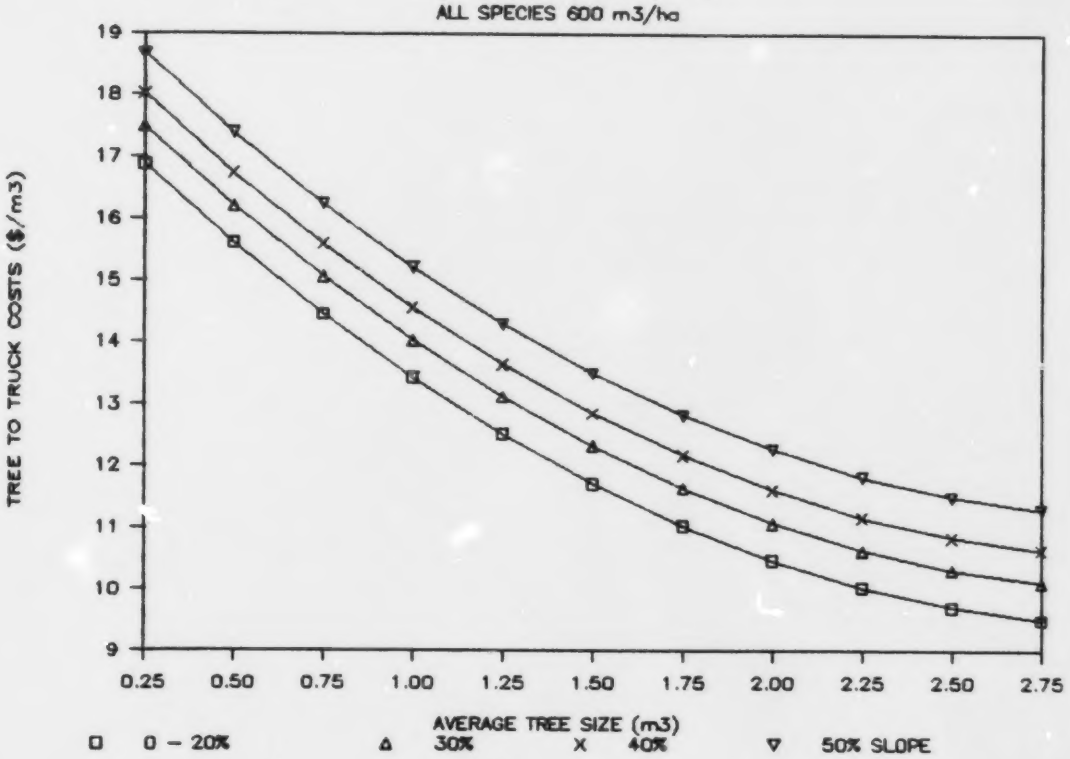
TREE-TO-TRUCK COSTS

Volume per hectare 500 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$17.71	$17.67	$17.65	$18.28	$18.81	$19.46
0.50	$16.44	$16.40	$16.37	$17.01	$17.54	$18.19
0.75	$15.28	$15.25	$15.22	$15.85	$16.38	$17.04
1.00	$14.25	$14.21	$14.19	$14.82	$15.35	$16.00
1.25	$13.33	$13.30	$13.27	$13.90	$14.43	$15.09
1.50	$12.54	$12.50	$12.47	$13.11	$13.64	$14.29
1.75	$11.86	$11.82	$11.80	$12.43	$12.96	$13.61
2.00	$11.30	$11.26	$11.24	$11.87	$12.40	$13.05
2.25	$10.86	$10.82	$10.80	$11.43	$11.96	$12.61
2.50	$10.54	$10.50	$10.47	$11.11	$11.64	$12.29
2.75	$10.33	$10.30	$10.27	$10.90	$11.43	$12.09

CARIBOO REGION

ALL SPECIES 600 m3/ha

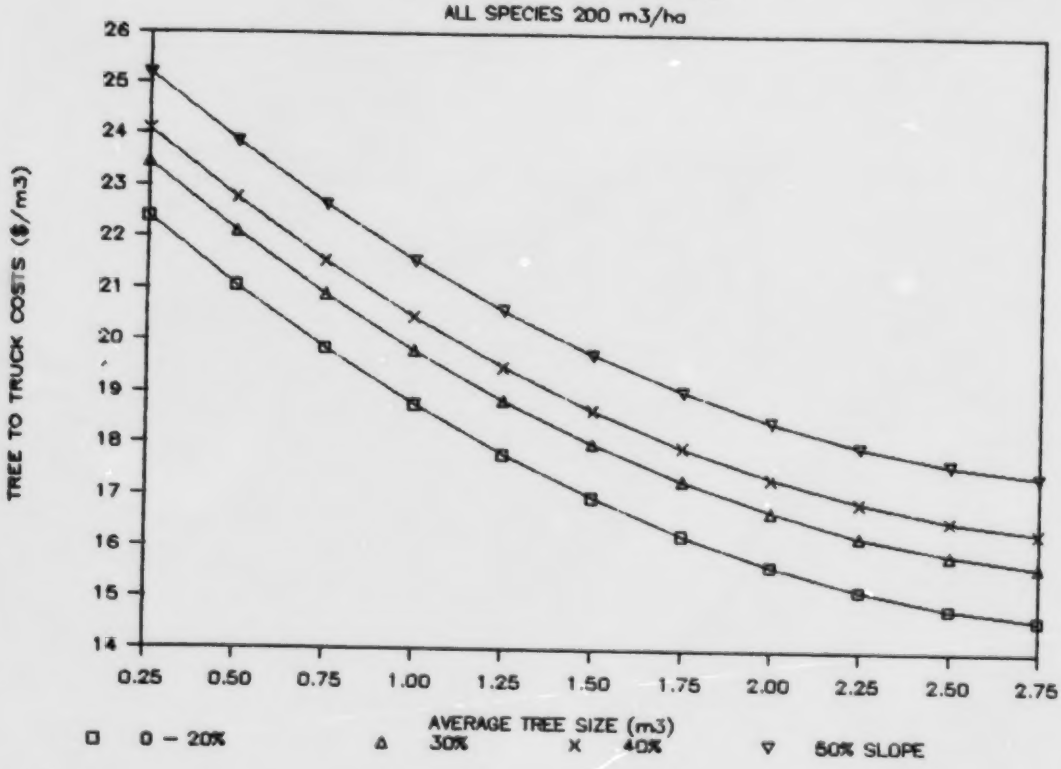


TREE-TO-TRUCK COSTS

Volume per hectare 600 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$16.91	$16.87	$16.85	$17.48	$18.01	$18.66
0.50	$15.64	$15.60	$15.57	$16.21	$16.74	$17.39
0.75	$14.48	$14.45	$14.42	$15.05	$15.58	$16.24
1.00	$13.45	$13.41	$13.39	$14.02	$14.55	$15.20
1.25	$12.53	$12.50	$12.47	$13.10	$13.63	$14.29
1.50	$11.74	$11.70	$11.67	$12.31	$12.84	$13.49
1.75	$11.06	$11.02	$11.00	$11.63	$12.16	$12.81
2.00	$10.50	$10.46	$10.44	$11.07	$11.60	$12.25
2.25	$10.06	$10.02	$10.00	$10.63	$11.16	$11.81
2.50	$9.74	$9.70	$9.67	$10.31	$10.84	$11.49
2.75	$9.53	$9.50	$9.47	$10.10	$10.63	$11.29

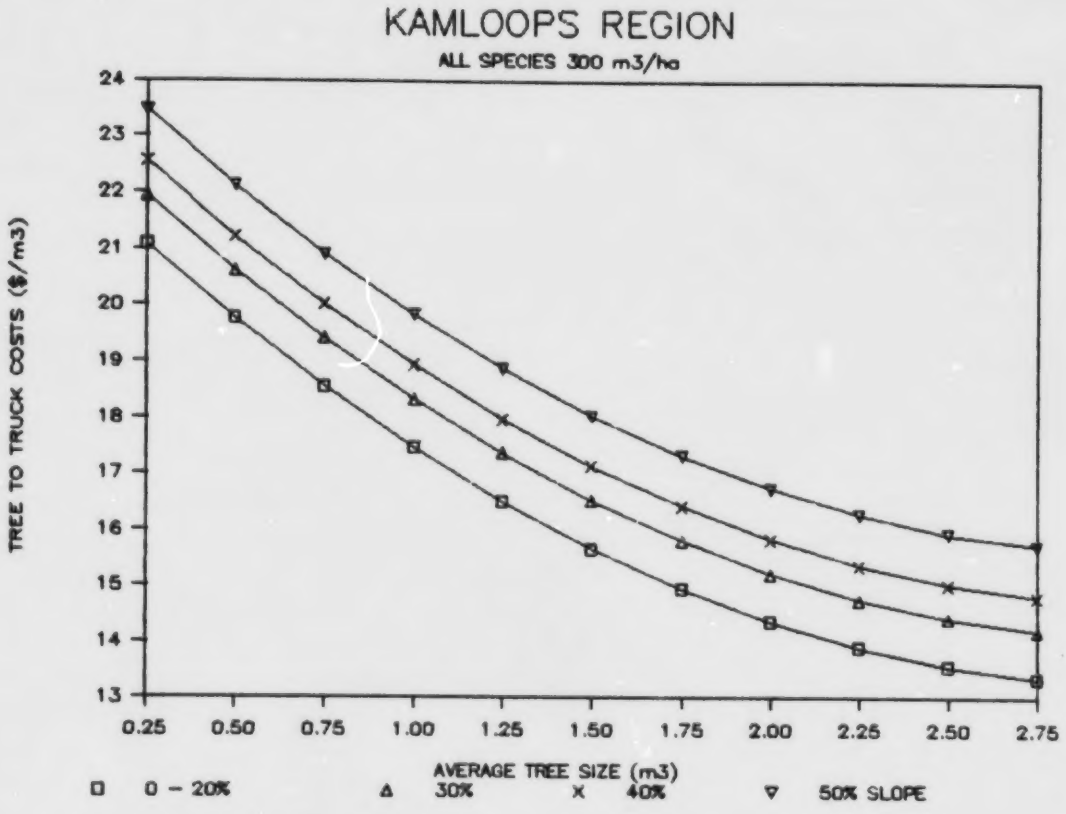
KAMLOOPS REGION



TREE-TO-TRUCK COSTS

Volume per hectare 200 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$22.38	$22.37	$22.42	$23.44	$24.09	$25.18
0.50	$21.04	$21.04	$21.08	$22.10	$22.75	$23.84
0.75	$19.83	$19.83	$19.87	$20.89	$21.54	$22.63
1.00	$18.74	$18.74	$18.79	$19.80	$20.45	$21.54
1.25	$17.78	$17.78	$17.83	$18.84	$19.49	$20.58
1.50	$16.95	$16.94	$16.99	$18.01	$18.66	$19.75
1.75	$16.23	$16.23	$16.28	$17.29	$17.94	$19.03
2.00	$15.65	$15.64	$15.69	$16.71	$17.36	$18.45
2.25	$15.18	$15.18	$15.23	$16.24	$16.89	$17.98
2.50	$14.85	$14.84	$14.89	$15.91	$16.56	$17.65
2.75	$14.63	$14.63	$14.68	$15.69	$16.34	$17.43

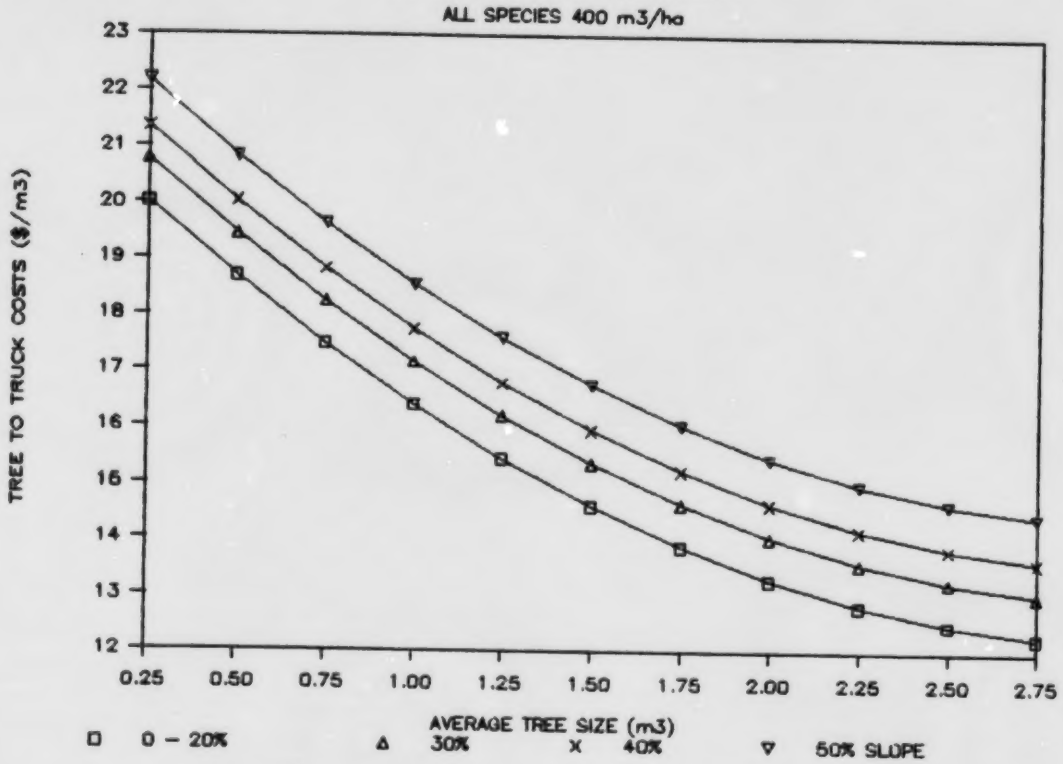


TREE-TO-TRUCK COSTS

Volume per hectare 300 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$21.10	$21.08	$21.09	$21.94	$22.55	$23.45
0.50	$19.76	$19.74	$19.76	$20.61	$21.22	$22.12
0.75	$18.55	$18.53	$18.54	$19.40	$20.01	$20.91
1.00	$17.46	$17.44	$17.46	$18.31	$18.92	$19.82
1.25	$16.50	$16.48	$16.50	$17.35	$17.96	$18.86
1.50	$15.67	$15.65	$15.66	$16.51	$17.12	$18.02
1.75	$14.95	$14.93	$14.95	$15.80	$16.41	$17.31
2.00	$14.37	$14.35	$14.36	$15.21	$15.82	$16.72
2.25	$13.90	$13.88	$13.90	$14.75	$15.36	$16.26
2.50	$13.57	$13.55	$13.56	$14.41	$15.02	$15.92
2.75	$13.35	$13.33	$13.35	$14.20	$14.81	$15.71

KAMLOOPS REGION

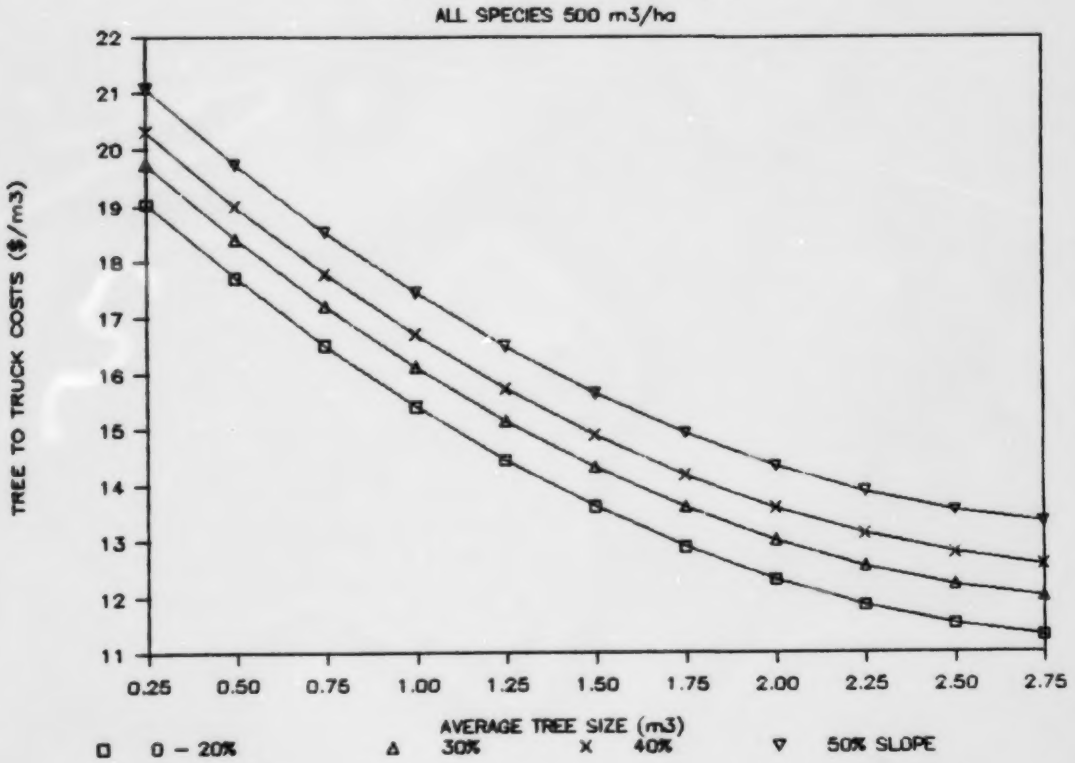


TREE-TO-TRUCK COSTS

Volume per hectare 400 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$20.04	$20.01	$20.01	$20.78	$21.36	$22.17
0.50	$18.70	$18.67	$18.67	$19.44	$20.03	$20.84
0.75	$17.49	$17.46	$17.46	$18.23	$18.82	$19.63
1.00	$16.40	$16.38	$16.37	$17.14	$17.73	$18.54
1.25	$15.44	$15.42	$15.41	$16.18	$16.77	$17.58
1.50	$14.61	$14.58	$14.58	$15.35	$15.93	$16.74
1.75	$13.89	$13.87	$13.86	$14.63	$15.22	$16.03
2.00	$13.31	$13.28	$13.28	$14.05	$14.63	$15.44
2.25	$12.84	$12.82	$12.81	$13.58	$14.17	$14.98
2.50	$12.51	$12.48	$12.48	$13.25	$13.83	$14.64
2.75	$12.29	$12.27	$12.26	$13.03	$13.62	$14.43

KAMLOOPS REGION

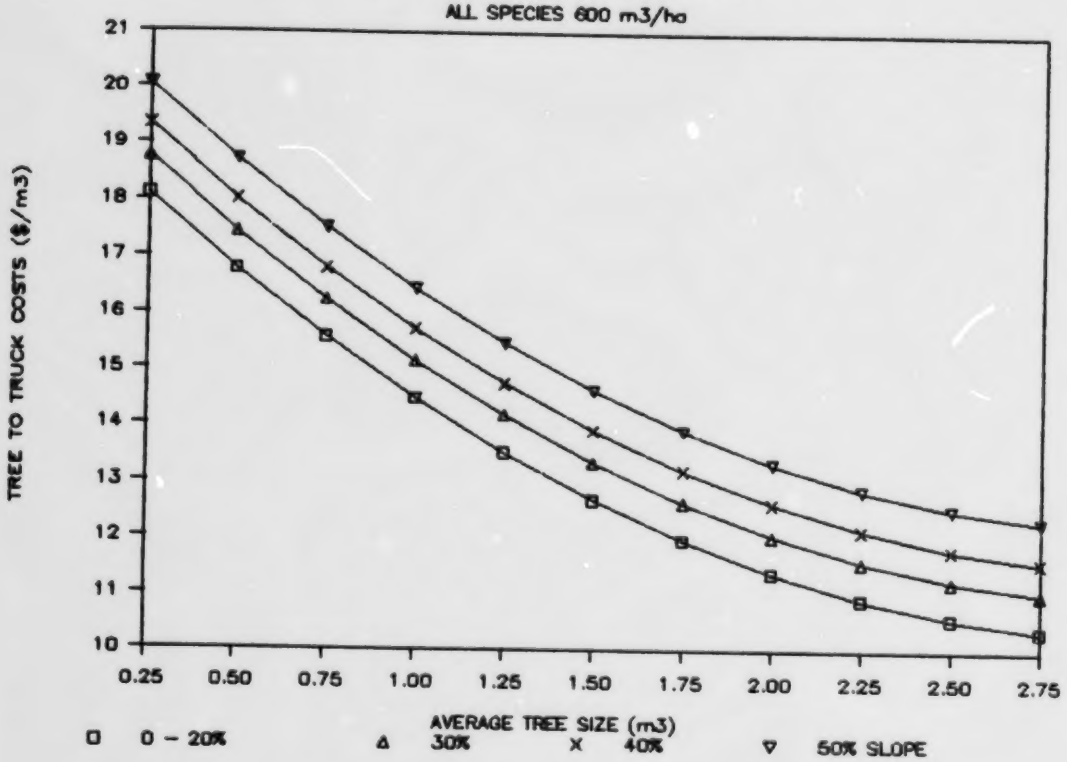


TREE-TO-TRUCK COSTS

Volume per hectare 500 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$19.06	$19.03	$19.02	$19.74	$20.32	$21.07
0.50	$17.73	$17.70	$17.68	$18.41	$18.98	$19.73
0.75	$16.52	$16.49	$16.47	$17.19	$17.77	$18.52
1.00	$15.43	$15.40	$15.39	$16.11	$16.68	$17.43
1.25	$14.47	$14.44	$14.43	$15.15	$15.72	$16.47
1.50	$13.63	$13.60	$13.59	$14.31	$14.89	$15.64
1.75	$12.92	$12.89	$12.88	$13.60	$14.17	$14.92
2.00	$12.34	$12.30	$12.29	$13.01	$13.59	$14.34
2.25	$11.87	$11.84	$11.83	$12.55	$13.12	$13.87
2.50	$11.53	$11.50	$11.49	$12.21	$12.79	$13.54
2.75	$11.32	$11.29	$11.28	$12.00	$12.57	$13.32

KAMLOOPS REGION

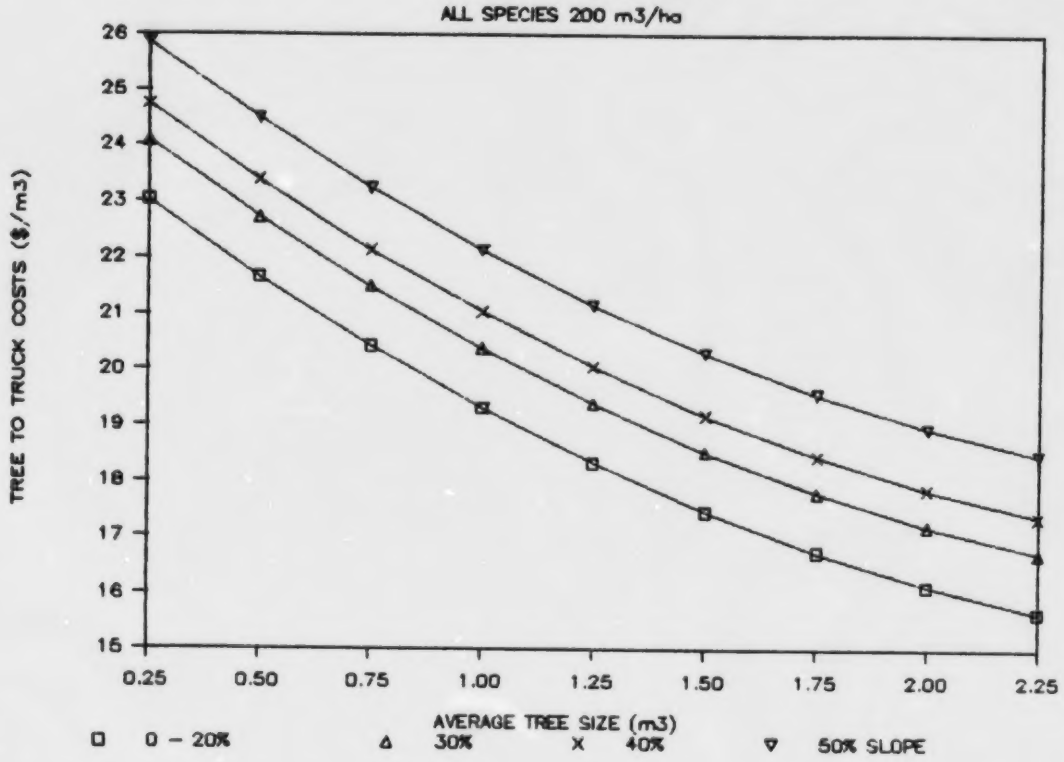


TREE-TO-TRUCK COSTS

Volume per hectare 600 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$18.14	$18.10	$18.08	$18.77	$19.34	$20.05
0.50	$16.80	$16.77	$16.75	$17.43	$18.00	$18.72
0.75	$15.59	$15.55	$15.54	$16.22	$16.79	$17.50
1.00	$14.50	$14.47	$14.45	$15.14	$15.70	$16.42
1.25	$13.54	$13.51	$13.49	$14.18	$14.74	$15.46
1.50	$12.71	$12.67	$12.65	$13.34	$13.91	$14.62
1.75	$11.99	$11.96	$11.94	$12.63	$13.19	$13.91
2.00	$11.41	$11.37	$11.35	$12.04	$12.61	$13.32
2.25	$10.94	$10.91	$10.89	$11.58	$12.14	$12.86
2.50	$10.61	$10.57	$10.55	$11.24	$11.81	$12.52
2.75	$10.39	$10.36	$10.34	$11.03	$11.59	$12.31

NELSON REGION

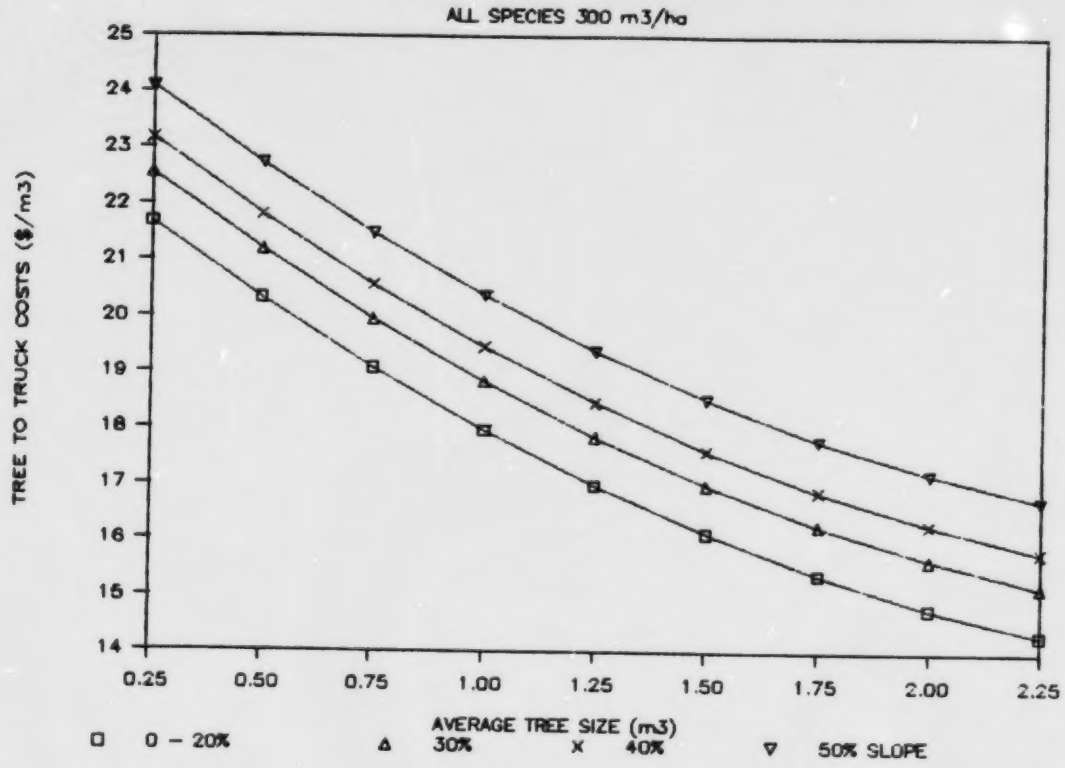


TREE-TO-TRUCK COSTS

Volume per hectare 200 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$23.02	$23.01	$23.05	$24.09	$24.74	$25.85
0.50	$21.65	$21.64	$21.68	$22.72	$23.38	$24.49
0.75	$20.41	$20.40	$20.44	$21.48	$22.14	$23.25
1.00	$19.30	$19.29	$19.33	$20.37	$21.03	$22.13
1.25	$18.31	$18.31	$18.35	$19.39	$20.04	$21.15
1.50	$17.46	$17.45	$17.49	$18.53	$19.18	$20.29
1.75	$16.73	$16.72	$16.76	$17.80	$18.46	$19.56
2.00	$16.13	$16.12	$16.16	$17.20	$17.85	$18.96
2.25	$15.65	$15.65	$15.69	$16.72	$17.38	$18.49

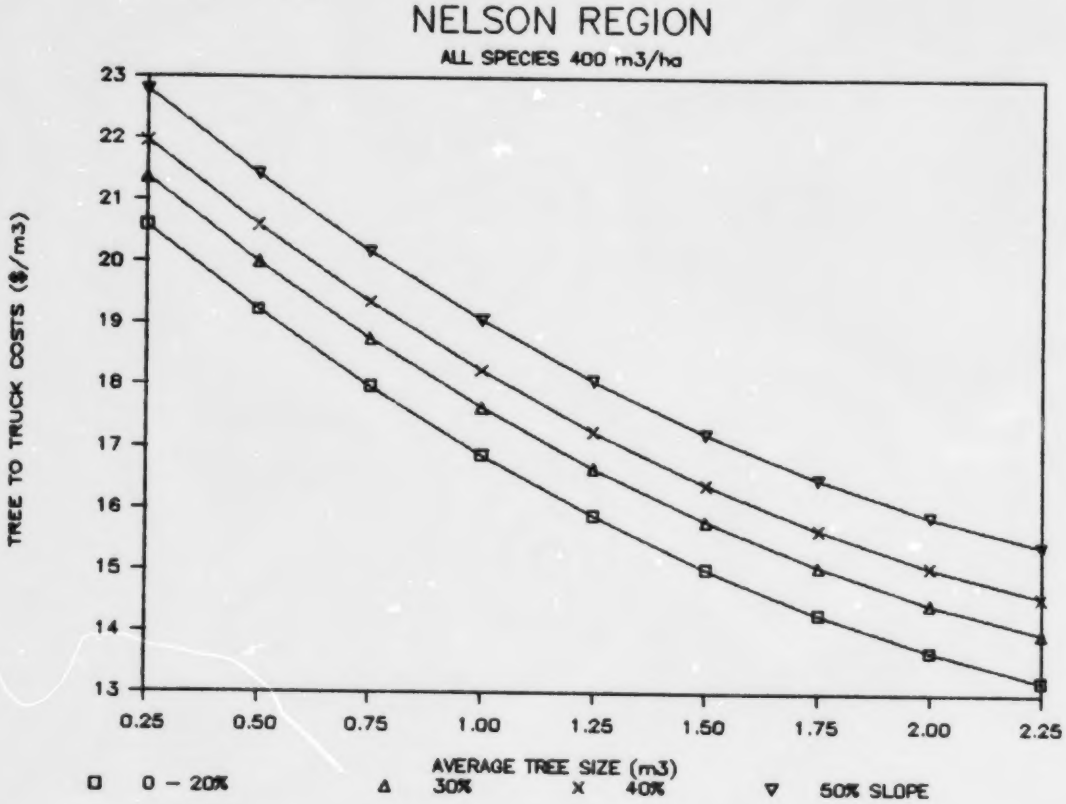
NELSON REGION



TREE-TO-TRUCK COSTS

Volume per hectare 300 m3

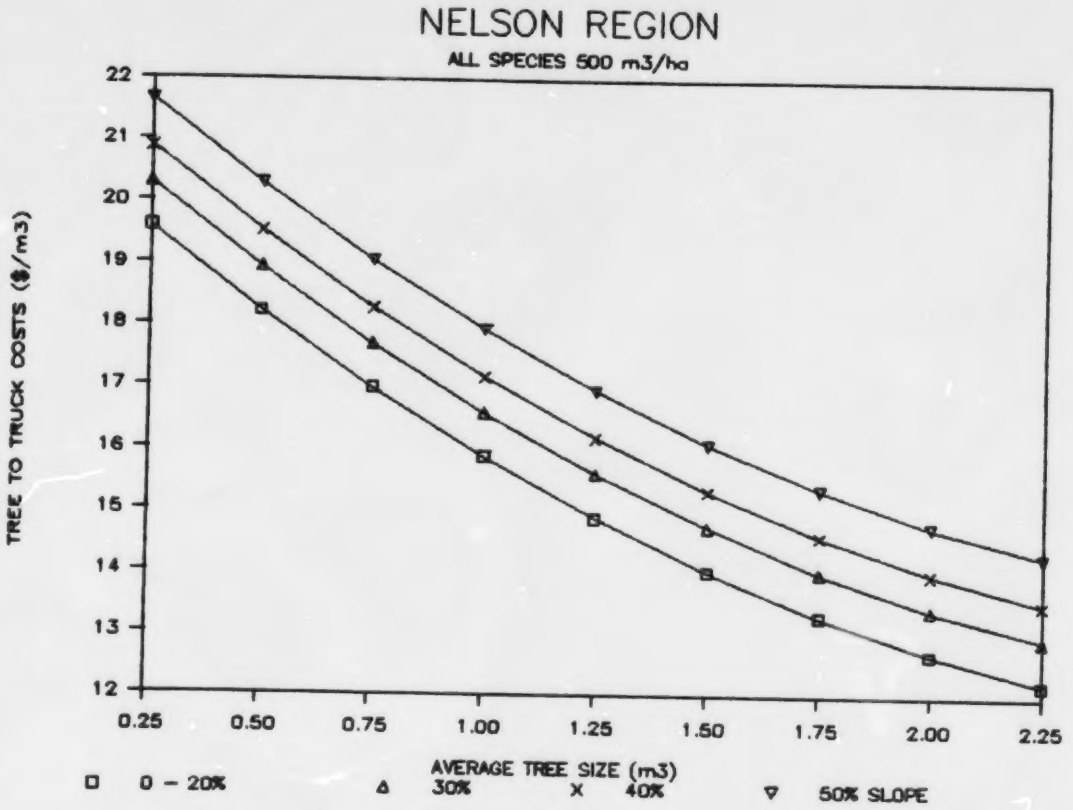
Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$21.70	$21.67	$21.68	$22.55	$23.17	$24.09
0.50	$20.33	$20.31	$20.32	$21.19	$21.80	$22.72
0.75	$19.09	$19.07	$19.08	$19.95	$20.56	$21.48
1.00	$17.98	$17.95	$17.96	$18.83	$19.45	$20.37
1.25	$16.99	$16.97	$16.98	$17.85	$18.47	$19.39
1.50	$16.14	$16.11	$16.12	$16.99	$17.61	$18.53
1.75	$15.41	$15.38	$15.39	$16.26	$16.88	$17.80
2.00	$14.81	$14.78	$14.79	$15.66	$16.28	$17.20
2.25	$14.33	$14.31	$14.32	$15.19	$15.81	$16.72



TREE-TO-TRUCK COSTS

Volume per hectare 400 m3

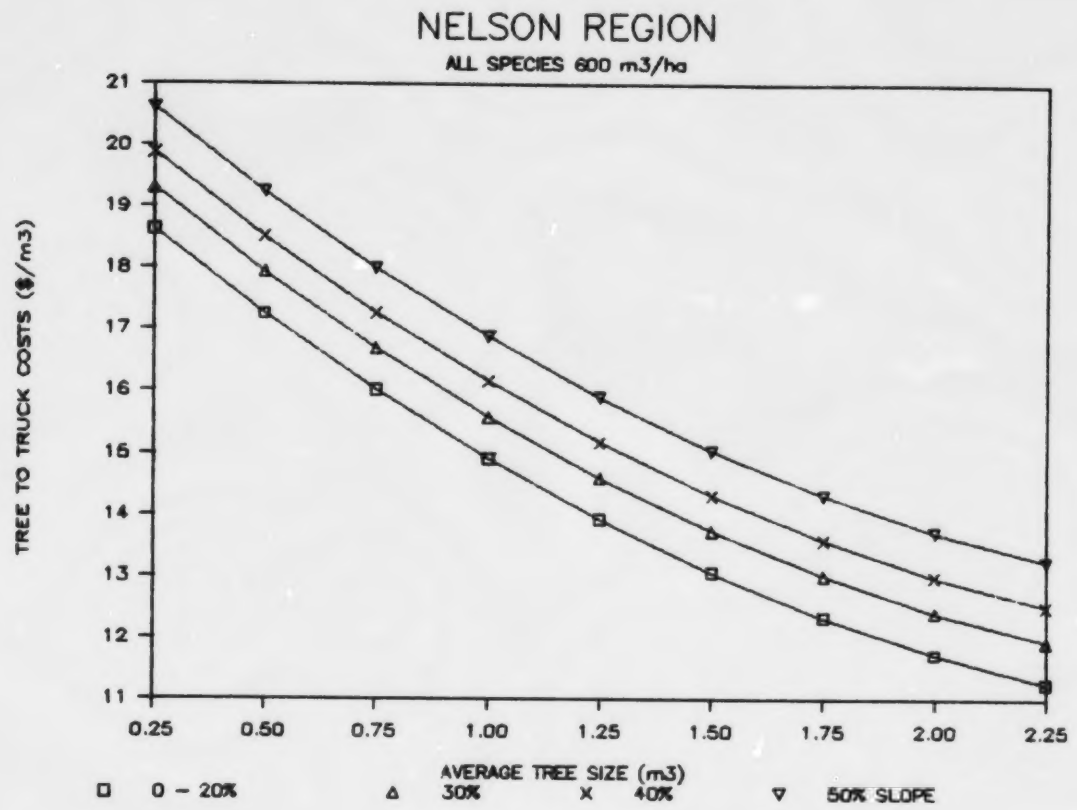
Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$20.61	$20.58	$20.57	$21.36	$21.95	$22.78
0.50	$19.24	$19.21	$19.20	$19.99	$20.59	$21.41
0.75	$18.00	$17.97	$17.96	$18.75	$19.35	$20.17
1.00	$16.89	$16.86	$16.85	$17.64	$18.23	$19.06
1.25	$15.90	$15.87	$15.87	$16.65	$17.25	$18.07
1.50	$15.05	$15.02	$15.01	$15.80	$16.39	$17.22
1.75	$14.32	$14.29	$14.28	$15.07	$15.66	$16.49
2.00	$13.71	$13.68	$13.68	$14.47	$15.06	$15.89
2.25	$13.24	$13.21	$13.20	$13.99	$14.59	$15.41



TREE-TO-TRUCK COSTS

Volume per hectare 500 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$19.61	$19.57	$19.56	$20.29	$20.88	$21.64
0.50	$18.24	$18.20	$18.19	$18.93	$19.51	$20.28
0.75	$17.00	$16.97	$16.95	$17.69	$18.27	$19.04
1.00	$15.89	$15.85	$15.84	$16.57	$17.16	$17.93
1.25	$14.90	$14.87	$14.85	$15.59	$16.18	$16.94
1.50	$14.05	$14.01	$14.00	$14.73	$15.32	$16.08
1.75	$13.32	$13.28	$13.27	$14.00	$14.59	$15.36
2.00	$12.72	$12.68	$12.67	$13.40	$13.99	$14.75
2.25	$12.24	$12.21	$12.19	$12.93	$13.51	$14.28

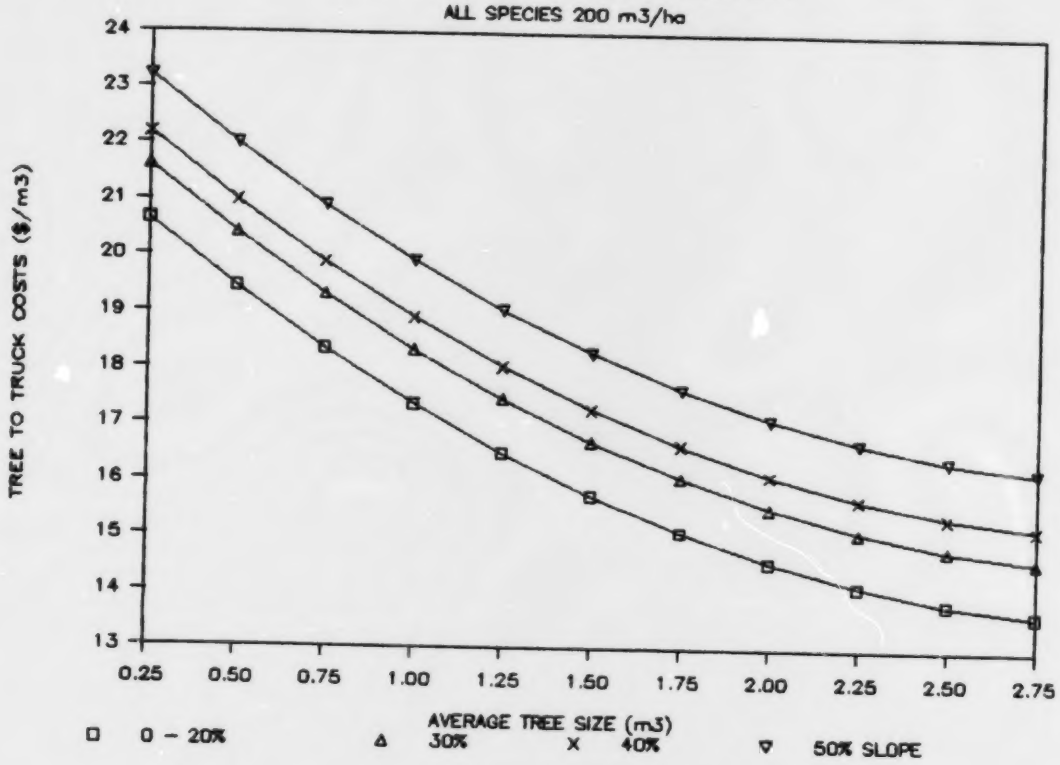


TREE-TO-TRUCK COSTS

Volume per hectare 600 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$18.65	$18.62	$18.59	$19.30	$19.88	$20.60
0.50	$17.29	$17.25	$17.23	$17.93	$18.51	$19.24
0.75	$16.05	$16.01	$15.99	$16.69	$17.27	$18.00
1.00	$14.94	$14.90	$14.88	$15.58	$16.16	$16.88
1.25	$13.95	$13.91	$13.89	$14.60	$15.17	$15.90
1.50	$13.09	$13.06	$13.03	$13.74	$14.32	$15.04
1.75	$12.37	$12.33	$12.31	$13.01	$13.59	$14.31
2.00	$11.76	$11.73	$11.70	$12.41	$12.99	$13.71
2.25	$11.29	$11.25	$11.23	$11.93	$12.51	$13.24

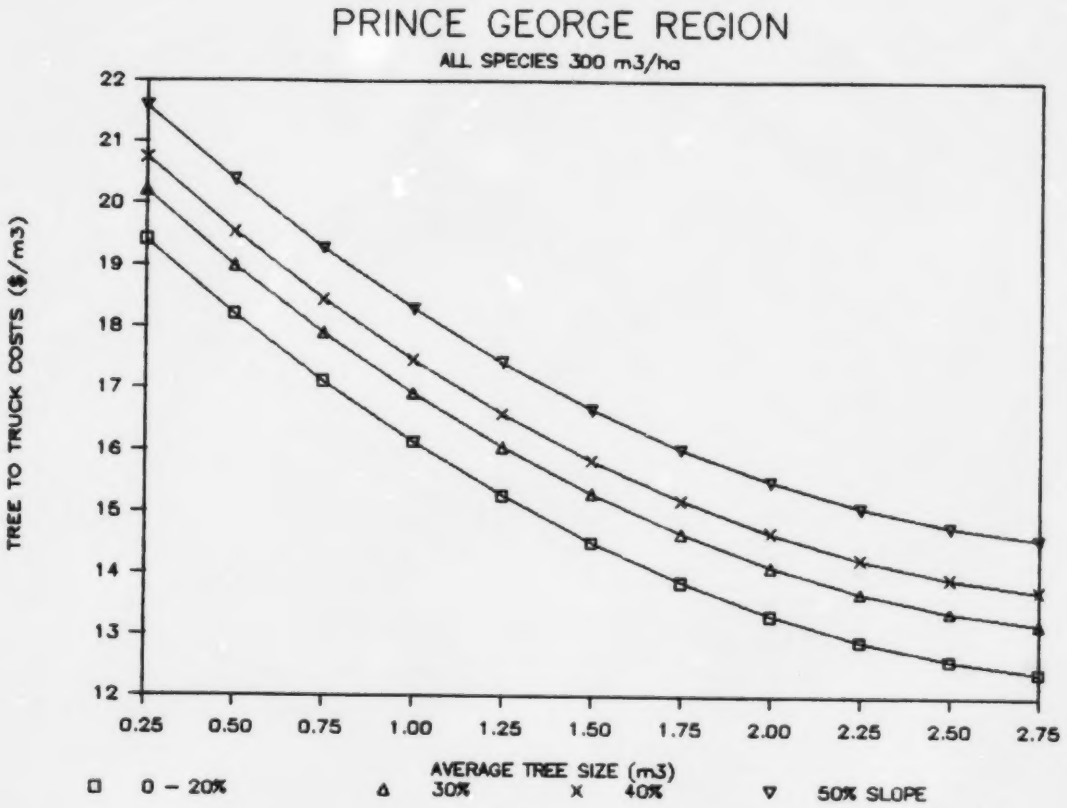
PRINCE GEORGE REGION



TREE-TO-TRUCK COSTS

Volume per hectare 200 m3

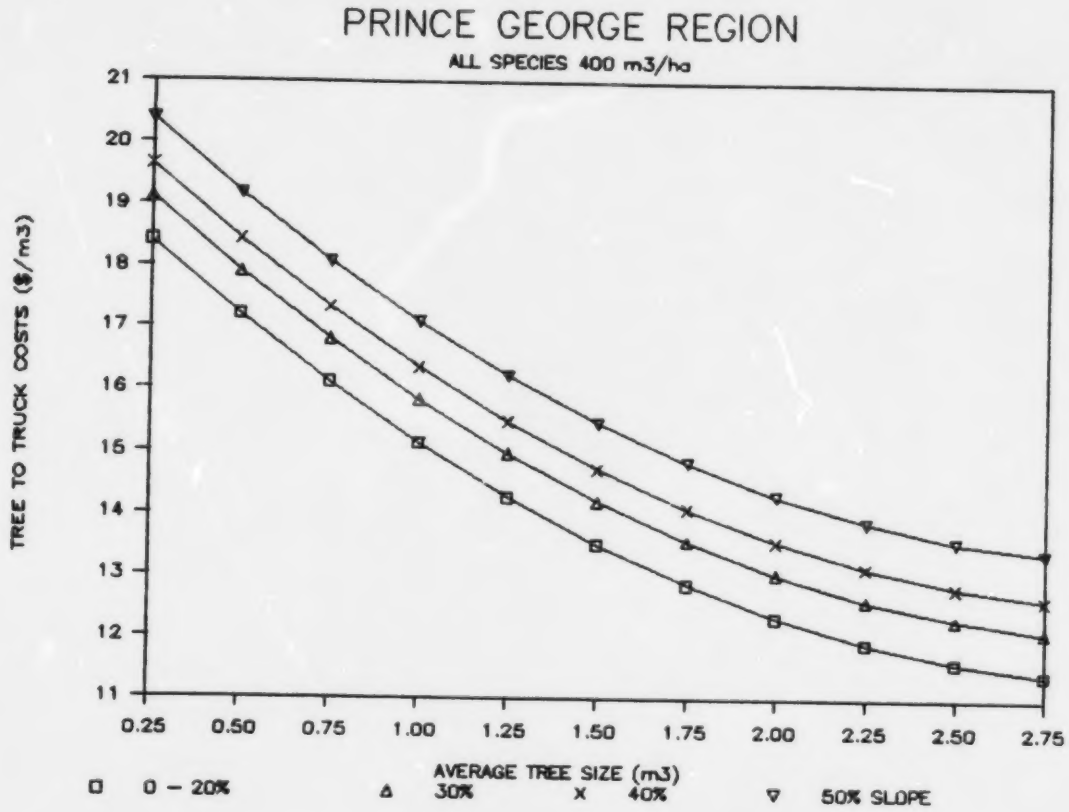
Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$20.64	$20.63	$20.67	$21.62	$22.19	$23.20
0.50	$19.43	$19.42	$19.46	$20.41	$20.98	$21.99
0.75	$18.34	$18.33	$18.36	$19.31	$19.89	$20.90
1.00	$17.35	$17.35	$17.38	$18.33	$18.90	$19.91
1.25	$16.48	$16.48	$16.51	$17.46	$18.03	$19.04
1.50	$15.73	$15.72	$15.75	$16.70	$17.28	$18.29
1.75	$15.08	$15.08	$15.11	$16.06	$16.63	$17.64
2.00	$14.55	$14.54	$14.58	$15.53	$16.10	$17.11
2.25	$14.13	$14.13	$14.16	$15.11	$15.68	$16.69
2.50	$13.83	$13.82	$13.85	$14.80	$15.38	$16.39
2.75	$13.63	$13.63	$13.66	$14.61	$15.18	$16.19



TREE-TO-TRUCK COSTS

Volume per hectare 300 m3

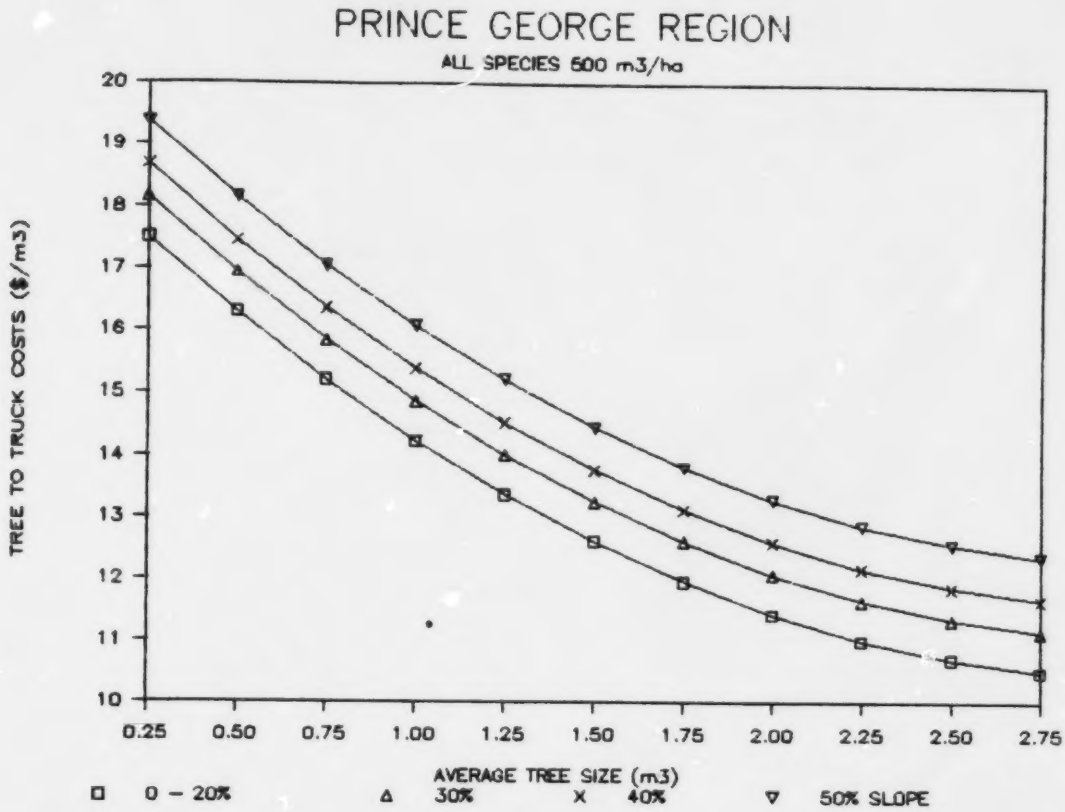
Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$19.42	$19.40	$19.41	$20.20	$20.74	$21.57
0.50	$18.21	$18.19	$18.20	$18.99	$19.53	$20.36
0.75	$17.12	$17.10	$17.10	$17.89	$18.44	$19.27
1.00	$16.13	$16.11	$16.12	$16.91	$17.45	$18.28
1.25	$15.26	$15.24	$15.25	$16.04	$16.58	$17.42
1.50	$14.51	$14.49	$14.49	$15.28	$15.83	$16.66
1.75	$13.86	$13.84	$13.85	$14.64	$15.18	$16.01
2.00	$13.33	$13.31	$13.32	$14.11	$14.65	$15.48
2.25	$12.91	$12.89	$12.90	$13.69	$14.23	$15.06
2.50	$12.61	$12.59	$12.59	$13.38	$13.93	$14.76
2.75	$12.41	$12.39	$12.40	$13.19	$13.73	$14.57



TREE-TO-TRUCK COSTS

Volume per hectare 400 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$18.43	$18.40	$18.40	$19.11	$19.63	$20.38
0.50	$17.22	$17.20	$17.19	$17.90	$18.43	$19.17
0.75	$16.13	$16.10	$16.09	$16.81	$17.33	$18.07
1.00	$15.15	$15.12	$15.11	$15.82	$16.35	$17.09
1.25	$14.28	$14.25	$14.24	$14.95	$15.48	$16.22
1.50	$13.52	$13.49	$13.48	$14.20	$14.72	$15.46
1.75	$12.87	$12.85	$12.84	$13.55	$14.08	$14.82
2.00	$12.34	$12.32	$12.31	$13.02	$13.55	$14.29
2.25	$11.92	$11.90	$11.89	$12.60	$13.13	$13.87
2.50	$11.62	$11.59	$11.58	$12.30	$12.82	$13.56
2.75	$11.43	$11.40	$11.39	$12.10	$12.63	$13.37

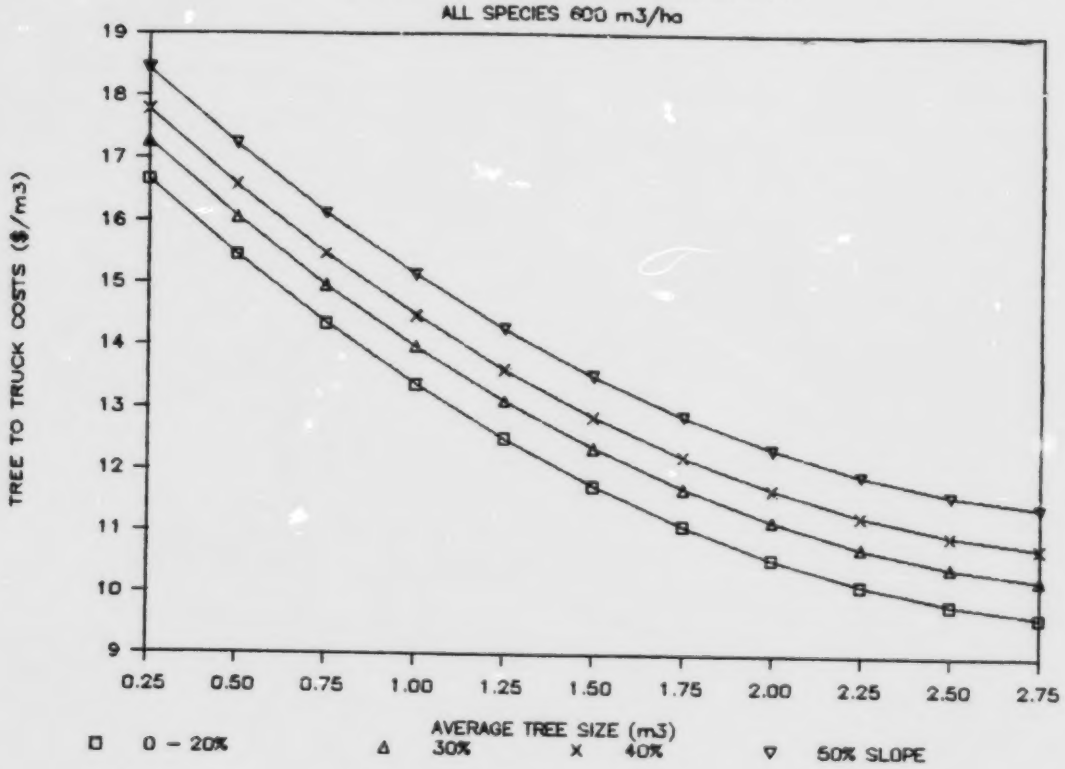


TREE-TO-TRUCK COSTS

Volume per hectare 500 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$17.53	$17.50	$17.49	$18.15	$18.67	$19.36
0.50	$16.33	$16.29	$16.28	$16.94	$17.46	$18.15
0.75	$15.23	$15.20	$15.18	$15.85	$16.36	$17.05
1.00	$14.25	$14.22	$14.20	$14.87	$15.38	$16.07
1.25	$13.38	$13.35	$13.33	$14.00	$14.51	$15.20
1.50	$12.62	$12.59	$12.57	$13.24	$13.75	$14.44
1.75	$11.98	$11.94	$11.93	$12.59	$13.11	$13.80
2.00	$11.44	$11.41	$11.40	$12.06	$12.58	$13.27
2.25	$11.03	$10.99	$10.98	$11.64	$12.16	$12.85
2.50	$10.72	$10.69	$10.67	$11.34	$11.85	$12.54
2.75	$10.53	$10.50	$10.48	$11.15	$11.66	$12.35

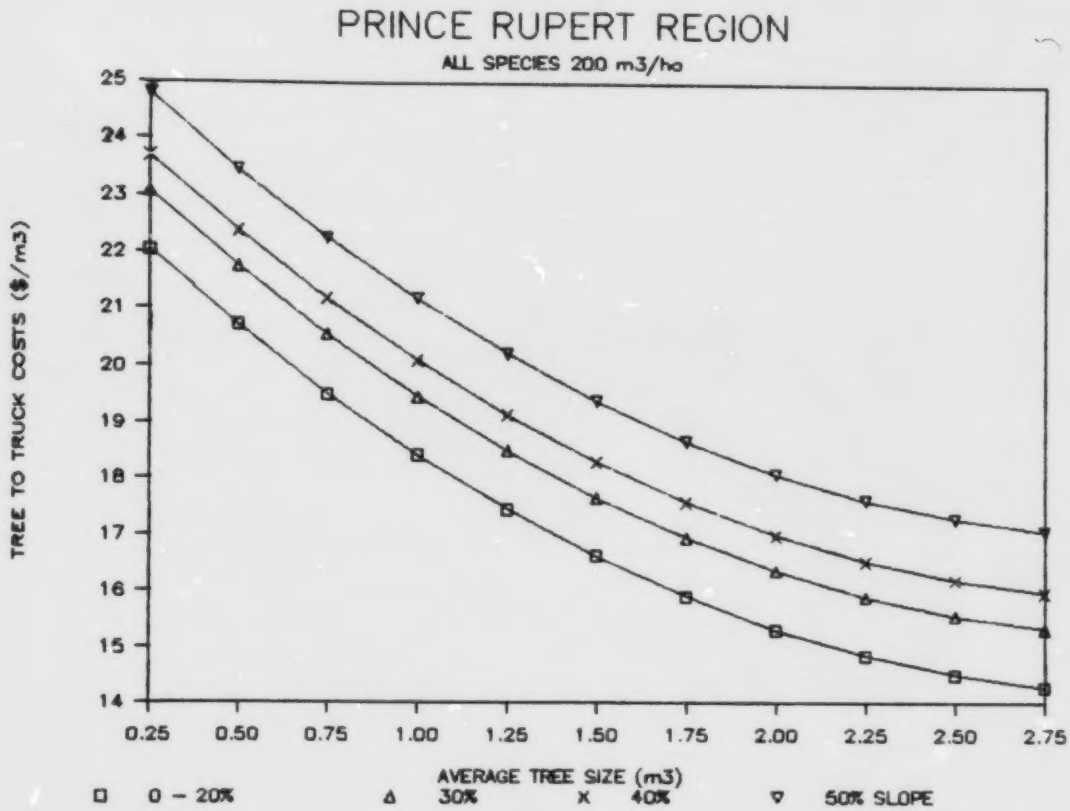
PRINCE GEORGE REGION



TREE-TO-TRUCK COSTS

Volume per hectare 600 m3

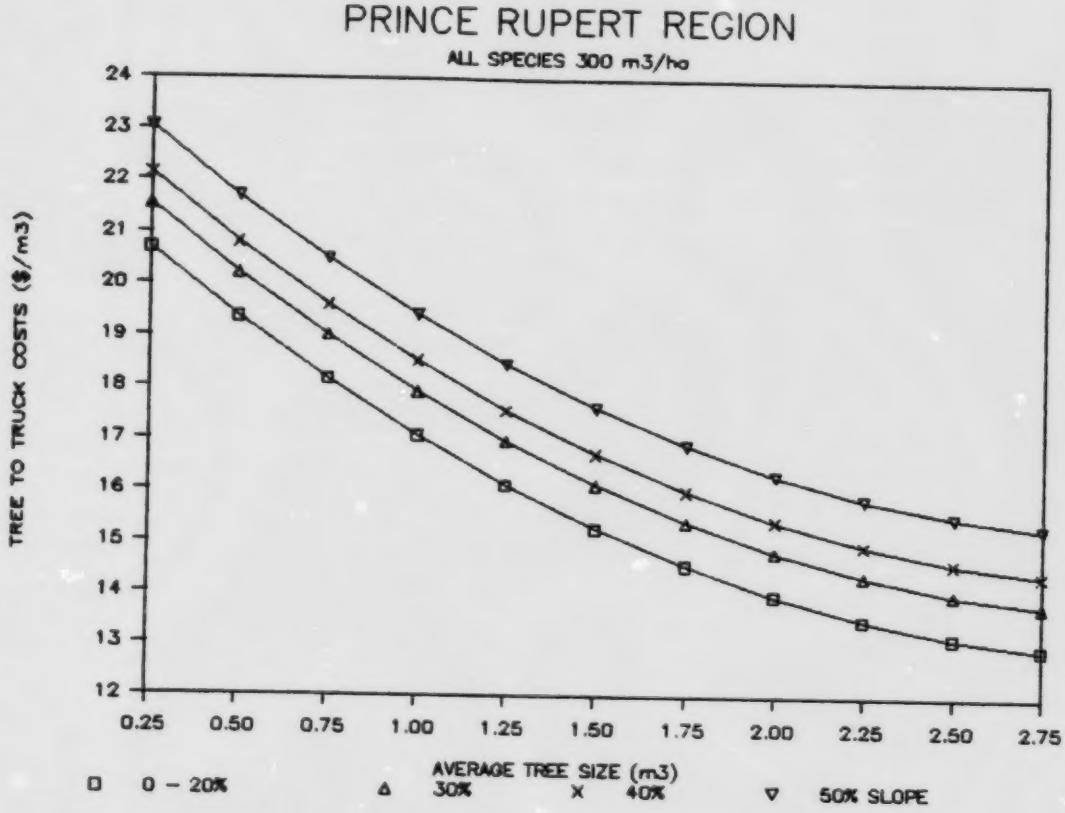
Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$16.68	$16.65	$16.63	$17.26	$17.77	$18.42
0.50	$15.47	$15.44	$15.42	$16.05	$16.56	$17.21
0.75	$14.38	$14.34	$14.32	$14.96	$15.46	$16.12
1.00	$13.40	$13.36	$13.34	$13.97	$14.48	$15.14
1.25	$12.53	$12.49	$12.47	$13.10	$13.61	$14.27
1.50	$11.77	$11.73	$11.71	$12.35	$12.86	$13.51
1.75	$11.12	$11.09	$11.07	$11.70	$12.21	$12.86
2.00	$10.59	$10.56	$10.54	$11.17	$11.68	$12.33
2.25	$10.17	$10.14	$10.12	$10.75	$11.26	$11.91
2.50	$9.87	$9.83	$9.81	$10.45	$10.96	$11.61
2.75	$9.68	$9.64	$9.62	$10.25	$10.76	$11.42



TREE-TO-TRUCK COSTS

Volume per hectare 200 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$22.03	$22.02	$22.05	$23.07	$23.70	$24.79
0.50	$20.69	$20.68	$20.71	$21.74	$22.37	$23.46
0.75	$19.48	$19.47	$19.50	$20.53	$21.16	$22.25
1.00	$18.39	$18.38	$18.42	$19.44	$20.07	$21.16
1.25	$17.43	$17.42	$17.46	$18.48	$19.11	$20.20
1.50	$16.60	$16.59	$16.62	$17.64	$18.27	$19.36
1.75	$15.88	$15.87	$15.91	$16.93	$17.56	$18.65
2.00	$15.30	$15.29	$15.32	$16.34	$16.97	$18.06
2.25	$14.83	$14.82	$14.86	$15.88	$16.51	$17.60
2.50	$14.50	$14.49	$14.52	$15.54	$16.17	$17.26
2.75	$14.28	$14.27	$14.31	$15.33	$15.96	$17.05

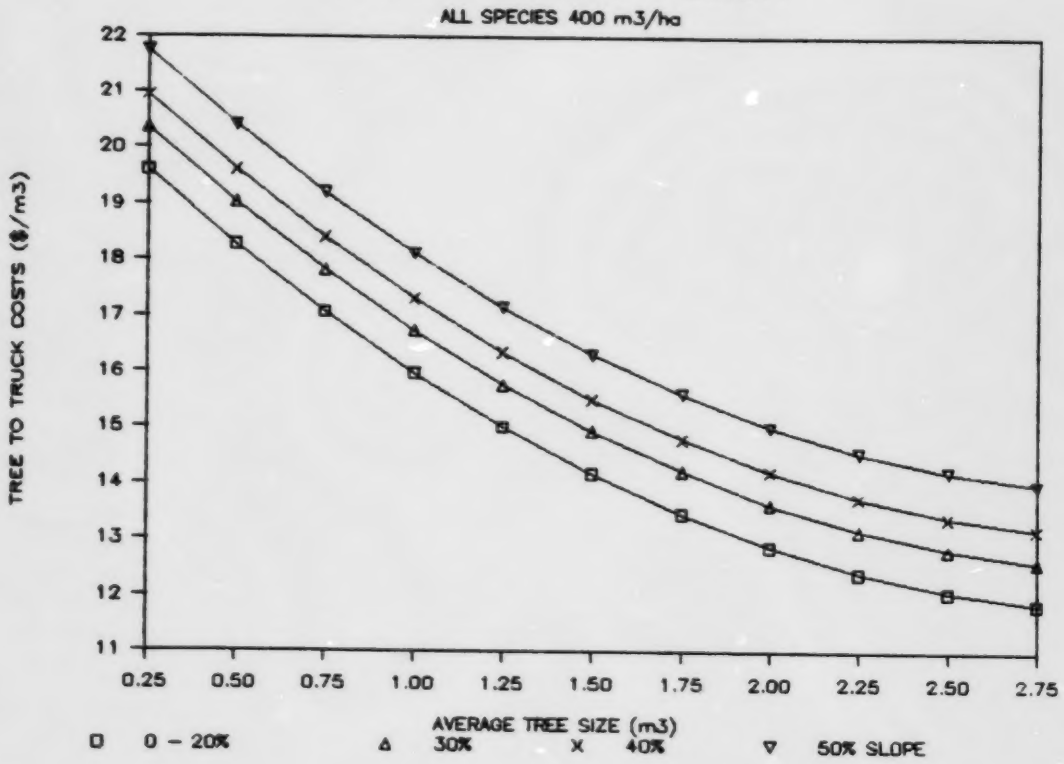


TREE-TO-TRUCK COSTS

Volume per hectare 300 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$20.71	$20.68	$20.69	$21.54	$22.14	$23.04
0.50	$19.37	$19.35	$19.35	$20.21	$20.80	$21.70
0.75	$18.16	$18.14	$18.14	$19.00	$19.59	$20.49
1.00	$17.07	$17.05	$17.05	$17.91	$18.51	$19.41
1.25	$16.11	$16.09	$16.09	$16.95	$17.55	$18.45
1.50	$15.28	$15.25	$15.26	$16.11	$16.71	$17.61
1.75	$14.56	$14.54	$14.54	$15.40	$16.00	$16.90
2.00	$13.98	$13.95	$13.96	$14.81	$15.41	$16.31
2.25	$13.51	$13.49	$13.49	$14.35	$14.95	$15.85
2.50	$13.18	$13.15	$13.16	$14.01	$14.61	$15.51
2.75	$12.96	$12.94	$12.94	$13.80	$14.40	$15.30

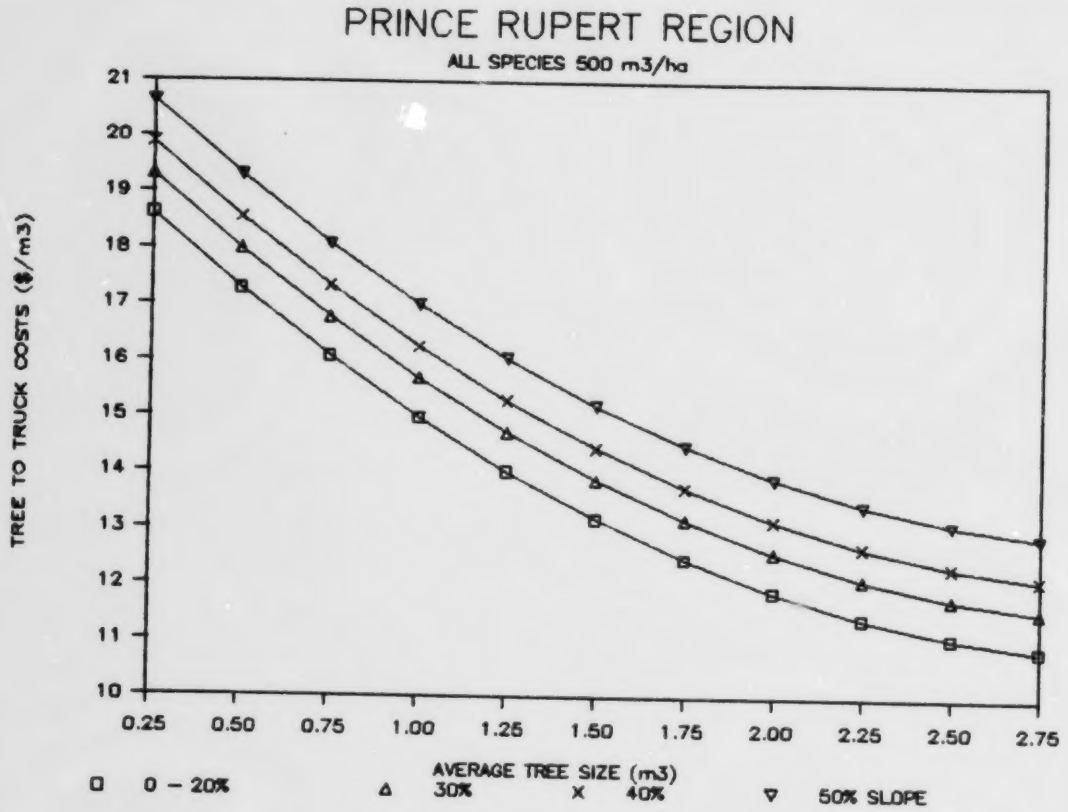
PRINCE RUPERT REGION



TREE-TO-TRUCK COSTS

Volume per hectare 400 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$19.63	$19.59	$19.58	$20.36	$20.94	$21.74
0.50	$18.29	$18.26	$18.25	$19.02	$19.60	$20.41
0.75	$17.08	$17.05	$17.04	$17.81	$18.39	$19.20
1.00	$15.99	$15.96	$15.95	$16.73	$17.30	$18.11
1.25	$15.03	$15.00	$14.99	$15.77	$16.34	$17.15
1.50	$14.20	$14.16	$14.15	$14.93	$15.51	$16.31
1.75	$13.48	$13.45	$13.44	$14.22	$14.79	$15.60
2.00	$12.90	$12.86	$12.85	$13.63	$14.21	$15.01
2.25	$12.43	$12.40	$12.39	$13.17	$13.74	$14.55
2.50	$12.10	$12.06	$12.05	$12.83	$13.41	$14.21
2.75	$11.88	$11.85	$11.84	$12.62	$13.19	$14.00

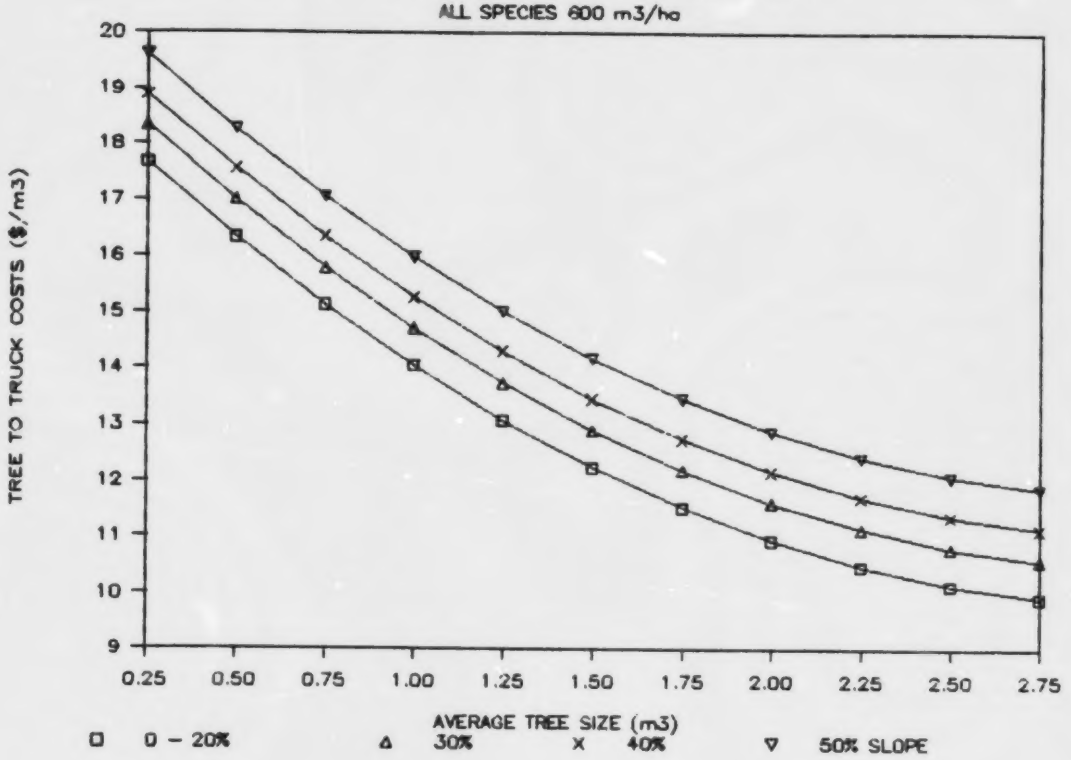


TREE-TO-TRUCK COSTS

Volume per hectare 500 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$18.64	$18.61	$18.59	$19.31	$19.88	$20.63
0.50	$17.31	$17.27	$17.25	$17.98	$18.54	$19.29
0.75	$16.10	$16.06	$16.04	$16.77	$17.33	$18.08
1.00	$15.01	$14.97	$14.96	$15.68	$16.25	$17.00
1.25	$14.05	$14.01	$13.99	$14.72	$15.29	$16.04
1.50	$13.21	$13.18	$13.16	$13.88	$14.45	$15.20
1.75	$12.50	$12.46	$12.45	$13.17	$13.74	$14.49
2.00	$11.91	$11.88	$11.86	$12.58	$13.15	$13.90
2.25	$11.45	$11.41	$11.40	$12.12	$12.69	$13.44
2.50	$11.11	$11.08	$11.06	$11.78	$12.35	$13.10
2.75	$10.90	$10.86	$10.84	$11.57	$12.14	$12.89

PRINCE RUPERT REGION



TREE-TO-TRUCK COSTS

Volume per hectare 600 m3

Tree Size (m3)	Slope (%) 0	10	20	30	40	50
0.25	$17.71	$17.67	$17.64	$18.33	$18.90	$19.61
0.50	$16.37	$16.33	$16.31	$17.00	$17.56	$18.27
0.75	$15.16	$15.12	$15.10	$15.79	$16.35	$17.06
1.00	$14.07	$14.04	$14.01	$14.70	$15.26	$15.98
1.25	$13.11	$13.07	$13.05	$13.74	$14.30	$15.01
1.50	$12.28	$12.24	$12.21	$12.90	$13.46	$14.18
1.75	$11.56	$11.53	$11.50	$12.19	$12.75	$13.47
2.00	$10.98	$10.94	$10.91	$11.60	$12.17	$12.88
2.25	$10.51	$10.48	$10.45	$11.14	$11.70	$12.42
2.50	$10.18	$10.14	$10.11	$10.80	$11.36	$12.08
2.75	$9.96	$9.92	$9.90	$10.59	$11.15	$11.86

5.11 Log Truck-Haul Costs - Vancouver Region

ON AND OFF-HIGHWAY TRUCKS

One-way Haul distance (km)	Cost $/m3
0	$2.97
10	$3.55
20	$4.12
30	$4.70
40	$5.27
50	$5.85
60	$6.42
70	$7.00
80	$7.57
90	$8.15
100	$8.72
110	$9.30
120	$9.87

5.12 Towing and Barging Rates

POINT OF ORIGIN	COST	METHOD	POINT OF ORIGIN	COST	METHOD
1 HOLBERG	4.56	BARGE	36 COLEMAN CREEK	0.39	TOW
2 HUSHAMU CREEK	4.40	BARGE	37 MacTUSH CREEK	0.27	TOW
3 COAL HARBOUR	4.40	BARGE	38 CHINA CREEK	0.12	TOW
4 WINTER HARBOUR	4.19	BARGE	39 ALBERNI	0.00	TOW
5 KOPRINO HARBOUR	4.19	BARGE	40 PORT RENFREW	2.76	TOW
6 CLEAGH CREEK	4.19	BARGE	41 JORDAN RIVER	1.97	TOW
7 INGERSOLL	4.19	BARGE	42 SOOKE	1.67	TOW
8 KULTUS COVE	4.19	BARGE	43 VICTORIA	1.11	TOW
9 JEUNE LANDING	3.40	BARGE	44 COWICHAN BAY	0.40	TOW
10 OUOUKINSH INLET	3.88	BARGE	45 LADYSMITH	0.19	TOW
11 EASY INLET	3.77	BARGE	46 NANAIMO	0.62	TOW
12 PORT ELIZA	3.46	BARGE	47 NORTHWEST BAY	1.05	TOW
13 ESPINOSA INLET	3.56	BARGE	48 COURTENAY	1.44	TOW
14 BARR CREEK	3.56	BARGE	49 MENZIES BAY	1.44	TOW
15 ZEBALLOS	3.67	BARGE	50 KELSEY BAY	2.04	TOW
16 HECATE-NOOTKA ISL	3.35	BARGE	51 SOUTHEAST BAY	2.13	TOW
17 BLOWHOLE BAY	3.35	BARGE	52 EVE RIVER	2.18	TOW
18 TSOWWIN RIVER	3.25	BARGE	53 NAKA CREEK	2.31	TOW
19 KENDRICK INLET	3.25	BARGE	54 BEAVER COVE	2.41	TOW
20 PLUMPER HARBOUR	3.14	BARGE	55 PORT McNEILL	2.57	TOW
21 TLUPANA RIVER	3.25	BARGE	56 PORT HARDY	2.83	TOW
22 HEAD BAY	3.25	BARGE	57 SEYMOUR INLET	4.83	TOW
23 MOOYAH RIVER	3.25	BARGE	58 DRURY INLET	3.30	TOW
24 HOUSTON RIVER	3.25	BARGE	59 MOUTH, KINGCOME IN	2.76	TOW
25 McCURDY CREEK	3.35	BARGE	60 HEAD, KINGCOME IN	3.04	TOW
26 GOLD RIVER	3.35	BARGE	61 WAKEMAN SOUND	2.97	TOW
27 STEAMER COVE	2.94	BARGE	62 THOMPSON SOUND	2.52	TOW
28 CYPRE RIVER	2.83	BARGE	63 PORT ELIZABETH	2.41	TOW
29 HEAD, BEDWELL SOUND	2.94	BARGE	64 MOUTH, KNIGHT INLET	2.36	TOW
30 RANKIN SOUND	3.35	BARGE	65 HEAD, KNIGHT INLET	2.99	TOW
31 UCLUELET	1.21	TOW	66 PORT HARVEY	2.18	TOW
32 TOQUART BAY	1.05	TOW	67 PORT NEVILLE	2.18	TOW
33 UCHUCKLESIT	0.66	TOW	68 FORWARD HARBOUR	1.97	TOW
34 SARITA RIVER	0.77	TOW	69 MOUTH, LOUGHBOROUGH	1.78	TOW
35 SPENCER CREEK	0.55	TOW	70 HEAD, LOUGHBOROUGH	2.07	TOW

TOWING AND BARGING RATES (Cont.)

POINT OF ORIGIN	COST	METHOD	POINT OF ORIGIN	COST	METHOD
71 PHILLIPS ARM	1.73	TOW	106 KWATNA BAY/MINERVA CR	4.72	BARGE
72 FREDERICK ARM	1.68	TOW	107 NOOTUM RIVER	4.40	BARGE
73 MOUTH, BUTE INLET	1.47	TOW	108 MOSES INLET/INRIG BAY	4.30	BARGE
74 HEAD, BUTE INLET	1.97	TOW	109 HEAD, RIVERS INLET/ KILBELLA BAY	4.30	BARGE
75 MOUTH, TOBA INLET	1.39	TOW			
76 HEAD, TOBA INLET	1.71	TOW	110 BOSWELL INLET/ SECURITY BAY	4.09	BARGE
77 TEAKERNE ARM	1.34	TOW			
78 THEODOSIA ARM	1.42	TOW	111 STEWART	7.86	BARGE
79 POWELL RIVER	0.97	TOW	112 ALICE ARM	7.65	BARGE
80 STILLWATER	0.84	TOW	113 NASS BAY	7.34	BARGE
81 MOUTH, JERVIS INLET	0.79	TOW	114 KWINAMASS RIVER	7.13	BARGE
82 HEAD, JERVIS INLET	1.29	TOW	115 KHUTZEYMATEEN INLET	7.13	BARGE
83 HEAD, SECHELT INLET	1.29	TOW	116 WORK CHANNEL	7.13	BARGE
84 AGAMEMNON	0.71	TOW	117 TUCK INLET	6.71	BARGE
85 MNAB CREEK	0.31	TOW	118 PRINCE RUPERT	6.60	BARGE
86 SQUAMISH	0.37	TOW	119 PORCHER ISLAND	6.50	BARGE
87 SECOND NARROWS	0.57	TOW	120 KEMANO BAY	6.29	BARGE
88 INDIAN ARM	0.85	TOW	121 WEEWANIE CREEK	5.97	BARGE
89 FOOT OF PITT LAKE	0.82	TOW	122 BISHOP BAY	5.77	BARGE
90 HEAD OF PITT LAKE	1.12	TOW	123 RENNELL SOUND	7.86	BARGE
91 WHONNOCK	0.81	TOW	124 NADEN HARBOUR	7.86	BARGE
92 HATZIC	1.19	TOW	125 MASSET	7.44	BARGE
93 CHILLIWACK	1.23	TOW	126 McCLINTON BAY	7.85	BARGE
94 HARRISON BAY	1.98	TOW	127 DINAN BAY	7.86	BARGE
95 FOOT, HARRISON LAKE	2.78	TOW	128 FERGUSON BAY	7.76	BARGE
96 MID-HARRISON LAKE	3.03	TOW	129 SOUTH BAY	7.65	BARGE
97 HEAD, HARRISON LAKE	3.37	TOW	130 RENNERS PASSAGE	7.02	BARGE
98 SILVERHOPE CREEK	3.00	TOW	131 HONNA RIVER	7.02	BARGE
99 HOPE, ABOVE BRIDGE	3.17	TOW	132 SKIDEGATE INLET	6.92	BARGE
100 KIMSQUIT	5.24	BARGE	133 ALLIFORD BAY	6.92	BARGE
101 BELLA COOLA	5.03	BARGE	134 BEATTIE ANCHORAGE	6.60	BARGE
102 HEAD, S. BENTINCK	5.14	BARGE	135 SEWELL INLET	6.60	BARGE
103 ELCHO HARBOUR	4.82	BARGE	136 LYELL ISLAND	6.50	BARGE
104 OCEAN FALLS	4.72	BARGE	137 SCOTIA RIVER	7.44	BARGE
105 CAMPBELL ISLAND	4.61	BARGE	138 KUMEALON INLET	6.29	BARGE

Source: Ministry of Forests Coast Appraisal Manual (Dec.1988)

5.13 Log Truck-Haul Costs - Interior Regions

LOG TRUCK-HAUL COSTS ($/m3) CARIBOO REGION ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$2.33									
1.1	$2.56	$2.64								
1.3	$2.79	$2.87	$2.94							
1.5	$3.02	$3.10	$3.18	$3.26						
1.7	$3.25	$3.33	$3.41	$3.49	$3.57					
1.9	$3.48	$3.56	$3.64	$3.73	$3.81	$3.89				
2.1	$3.71	$3.79	$3.88	$3.96	$4.04	$4.13				
2.3	$3.94	$4.02	$4.11	$4.20	$4.28	$4.37				
2.5	$4.17	$4.26	$4.34	$4.43	$4.52	$4.60	$4.78			
2.7	$4.40	$4.49	$4.58	$4.67	$4.75	$4.84	$5.02			
2.9		$4.72	$4.81	$4.90	$4.99	$5.08	$5.26			
3.1		$4.95	$5.04	$5.14	$5.23	$5.32	$5.50	$5.68		
3.3			$5.28	$5.37	$5.46	$5.56	$5.74	$5.93		
3.5				$5.61	$5.70	$5.80	$5.98	$6.17		
3.7				$5.84	$5.94	$6.03	$6.23	$6.41		
3.9					$6.17	$6.27	$6.47	$6.66		
4.1					$6.41	$6.51	$6.71	$6.90	$7.15	
4.3					$6.65	$6.75	$6.95	$7.15	$7.39	
4.5						$6.99	$7.19	$7.39	$7.64	
4.7						$7.23	$7.43	$7.64	$7.89	$8.14
4.9						$7.46	$7.68	$7.88	$8.14	$8.39
5.1							$7.92	$8.13	$8.39	$8.65
5.3							$8.16	$8.37	$8.64	$8.90
5.5							$8.40	$8.62	$8.89	$9.15
5.7							$8.64	$8.86	$9.13	$9.40
5.9								$9.11	$9.38	$9.65
6.1								$9.35	$9.63	$9.91
6.3								$9.60	$9.88	$10.16
6.5									$10.13	$10.41
6.7									$10.38	$10.66
6.9									$10.63	$10.92
7.1									$10.87	$11.17
7.3									$11.12	$11.42
7.5										$11.67
7.7										$11.92
7.9										$12.18

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) CARIBOO REGION OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)				
	10	20	30	40	50
1.0	$2.06				
1.3	$2.29	$2.36			
1.6	$2.52	$2.60	$2.68		
1.9	$2.74	$2.83	$2.91	$2.99	
2.2	$2.97	$3.06	$3.14	$3.23	$3.31
2.5	$3.20	$3.29	$3.38	$3.46	$3.55
2.8	$3.43	$3.52	$3.61	$3.70	$3.79
3.1	$3.66	$3.75	$3.84	$3.94	$4.03
3.4	$3.89	$3.98	$4.08	$4.17	$4.27
3.7		$4.21	$4.31	$4.41	$4.51
4.0		$4.44	$4.54	$4.64	$4.74
4.3		$4.67	$4.78	$4.88	$4.98
4.6			$5.01	$5.12	$5.22
4.9			$5.25	$5.35	$5.46
5.2			$5.48	$5.59	$5.70
5.5			$5.71	$5.83	$5.94
5.8				$6.06	$6.18
6.1					$6.42
6.4					$6.66

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)				
	60	80	100	125	150
2.5	$3.64				
3.0	$4.04	$4.22			
3.5	$4.44	$4.63	$4.82		
4.0	$4.84	$5.04	$5.23		
4.5	$5.25	$5.45	$5.65	$5.90	
5.0	$5.65	$5.86	$6.07	$6.33	
5.5	$6.05	$6.27	$6.49	$6.76	$7.02
6.0	$6.45	$6.68	$6.91	$7.19	$7.46
6.5	$6.85	$7.09	$7.33	$7.61	$7.90
7.0	$7.26	$7.50	$7.74	$8.04	$8.33
7.5	$7.66	$7.91	$8.16	$8.47	$8.77
8.0		$8.32	$8.58	$8.90	$9.21
8.5		$8.73	$9.00	$9.32	$9.64
9.0		$9.14	$9.42	$9.75	$10.08
9.5			$9.84	$10.18	$10.52
10.0			$10.25	$10.61	$10.96
10.5			$10.67	$11.04	$11.39
11.0				$11.46	$11.83
11.5				$11.89	$12.27
12.0				$12.32	$12.70
12.5				$12.75	$13.14
13.0				$13.18	$13.58
13.5					$14.01
14.0					$14.45
14.5					$14.89
15.0					$15.33
15.5					$15.76

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) KAMLOOPS REGION ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$2.05									
1.1	$2.28	$2.36								
1.3	$2.51	$2.59	$2.66							
1.5	$2.74	$2.82	$2.90	$2.98						
1.7	$2.97	$3.05	$3.13	$3.21	$3.29					
1.9	$3.20	$3.28	$3.36	$3.45	$3.53	$3.61				
2.1	$3.43	$3.51	$3.60	$3.68	$3.76	$3.85				
2.3	$3.66	$3.74	$3.83	$3.92	$4.00	$4.09				
2.5	$3.89	$3.98	$4.06	$4.15	$4.24	$4.32	$4.50			
2.7	$4.12	$4.21	$4.30	$4.39	$4.47	$4.56	$4.74			
2.9		$4.44	$4.53	$4.62	$4.71	$4.80	$4.98			
3.1		$4.67	$4.76	$4.86	$4.95	$5.04	$5.22	$5.40		
3.3			$5.00	$5.09	$5.18	$5.28	$5.46	$5.65		
3.5				$5.33	$5.42	$5.52	$5.70	$5.89		
3.7				$5.56	$5.66	$5.75	$5.95	$6.13		
3.9					$5.89	$5.99	$6.19	$6.38		
4.1					$6.13	$6.23	$6.43	$6.62	$6.87	
4.3					$6.37	$6.47	$6.67	$6.87	$7.11	
4.5						$6.71	$6.91	$7.11	$7.36	
4.7						$6.95	$7.15	$7.36	$7.61	$7.86
4.9						$7.18	$7.40	$7.60	$7.86	$8.11
5.1							$7.64	$7.85	$8.11	$8.37
5.3							$7.88	$8.09	$8.36	$8.62
5.5							$8.12	$8.34	$8.61	$8.87
5.7							$8.36	$8.58	$8.85	$9.12
5.9								$8.83	$9.10	$9.37
6.1								$9.07	$9.35	$9.63
6.3								$9.32	$9.60	$9.88
6.5									$9.85	$10.13
6.7									$10.10	$10.38
6.9									$10.35	$10.64
7.1									$10.59	$10.89
7.3									$10.84	$11.14
7.5										$11.39
7.7										$11.64
7.9										$11.90

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) KAMLOOPS REGION OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 10	20	30	40	50
1.0	$1.78				
1.3	$2.01	$2.08			
1.6	$2.24	$2.32	$2.40		
1.9	$2.46	$2.55	$2.63	$2.71	
2.2	$2.69	$2.78	$2.86	$2.95	$3.03
2.5	$2.92	$3.01	$3.10	$3.18	$3.27
2.8	$3.15	$3.24	$3.33	$3.42	$3.51
3.1	$3.38	$3.47	$3.56	$3.66	$3.75
3.4	$3.61	$3.70	$3.80	$3.89	$3.99
3.7		$3.93	$4.03	$4.13	$4.23
4.0		$4.16	$4.26	$4.36	$4.46
4.3		$4.39	$4.50	$4.60	$4.70
4.6			$4.73	$4.84	$4.94
4.9			$4.97	$5.07	$5.18
5.2			$5.20	$5.31	$5.42
5.5			$5.43	$5.55	$5.66
5.8				$5.78	$5.90
6.1					$6.14
6.4					$6.38

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 60	80	100	125	150
2.5	$4.20				
3.0	$4.60	$4.78			
3.5	$5.00	$5.19	$5.38		
4.0	$5.41	$5.60	$5.80		
4.5	$5.81	$6.01	$6.22	$6.46	
5.0	$6.21	$6.42	$6.63	$6.89	
5.5	$6.61	$6.83	$7.05	$7.32	$7.58
6.0	$7.02	$7.24	$7.47	$7.75	$8.02
6.5	$7.42	$7.66	$7.89	$8.18	$8.46
7.0	$7.82	$8.07	$8.31	$8.60	$8.90
7.5	$8.22	$8.48	$8.73	$9.03	$9.33
8.0		$8.89	$9.14	$9.46	$9.77
8.5		$9.30	$9.56	$9.89	$10.21
9.0		$9.71	$9.98	$10.32	$10.64
9.5			$10.40	$10.74	$11.08
10.0			$10.82	$11.17	$11.52
10.5			$11.24	$11.60	$11.96
11.0				$12.03	$12.39
11.5				$12.46	$12.83
12.0				$12.88	$13.27
12.5				$13.31	$13.70
13.0				$13.74	$14.14
13.5					$14.58
14.0					$15.01
14.5					$15.45
15.0					$15.89
15.5					$16.33

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) NELSON REGION ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$1.94									
1.1	$2.17	$2.25								
1.3	$2.40	$2.48	$2.55							
1.5	$2.63	$2.71	$2.79	$2.87						
1.7	$2.86	$2.94	$3.02	$3.10	$3.18					
1.9	$3.09	$3.17	$3.25	$3.34	$3.42	$3.50				
2.1	$3.32	$3.40	$3.49	$3.57	$3.65	$3.74				
2.3	$3.55	$3.63	$3.72	$3.81	$3.89	$3.98				
2.5	$3.78	$3.87	$3.95	$4.04	$4.13	$4.21	$4.39			
2.7	$4.01	$4.10	$4.19	$4.28	$4.36	$4.45	$4.63			
2.9		$4.33	$4.42	$4.51	$4.60	$4.69	$4.87			
3.1		$4.56	$4.65	$4.75	$4.84	$4.93	$5.11	$5.29		
3.3			$4.89	$4.98	$5.07	$5.17	$5.35	$5.54		
3.5				$5.22	$5.31	$5.41	$5.59	$5.78		
3.7				$5.45	$5.55	$5.64	$5.84	$6.02		
3.9					$5.78	$5.88	$6.08	$6.27		
4.1					$6.02	$6.12	$6.32	$6.51	$6.76	
4.3					$6.26	$6.36	$6.56	$6.76	$7.00	
4.5						$6.60	$6.80	$7.00	$7.25	
4.7						$6.84	$7.04	$7.25	$7.50	$7.75
4.9						$7.07	$7.29	$7.49	$7.75	$8.00
5.1							$7.53	$7.74	$8.00	$8.26
5.3							$7.77	$7.98	$8.25	$8.51
5.5							$8.01	$8.23	$8.50	$8.76
5.7							$8.25	$8.47	$8.74	$9.01
5.9								$8.72	$8.99	$9.26
6.1								$8.96	$9.24	$9.52
6.3								$9.21	$9.49	$9.77
6.5									$9.74	$10.02
6.7									$9.99	$10.27
6.9									$10.24	$10.53
7.1									$10.48	$10.78
7.3									$10.73	$11.03
7.5										$11.28
7.7										$11.53
7.9										$11.79

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) NELSON REGION OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 10	20	30	40	50
1.0	$1.67				
1.3	$1.90	$1.97			
1.6	$2.13	$2.21	$2.29		
1.9	$2.35	$2.44	$2.52	$2.60	
2.2	$2.58	$2.67	$2.75	$2.84	$2.92
2.5	$2.81	$2.90	$2.99	$3.07	$3.16
2.8	$3.04	$3.13	$3.22	$3.31	$3.40
3.1	$3.27	$3.36	$3.45	$3.55	$3.64
3.4	$3.50	$3.59	$3.69	$3.78	$3.88
3.7		$3.82	$3.92	$4.02	$4.12
4.0		$4.05	$4.15	$4.25	$4.35
4.3		$4.28	$4.39	$4.49	$4.59
4.6			$4.62	$4.73	$4.83
4.9			$4.86	$4.96	$5.07
5.2			$5.09	$5.20	$5.31
5.5			$5.32	$5.44	$5.55
5.8				$5.67	$5.79
6.1					$6.03
6.4					$6.27

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 60	80	100	125	150
2.5	$4.09				
3.0	$4.49	$4.67			
3.5	$4.89	$5.08	$5.27		
4.0	$5.30	$5.49	$5.69		
4.5	$5.70	$5.90	$6.11	$6.35	
5.0	$6.10	$6.31	$6.52	$6.78	
5.5	$6.50	$6.72	$6.94	$7.21	$7.47
6.0	$6.91	$7.13	$7.36	$7.64	$7.91
6.5	$7.31	$7.55	$7.78	$8.07	$8.35
7.0	$7.71	$7.96	$8.20	$8.49	$8.79
7.5	$8.11	$8.37	$8.62	$8.92	$9.22
8.0		$8.78	$9.03	$9.35	$9.66
8.5		$9.19	$9.45	$9.78	$10.10
9.0		$9.60	$9.87	$10.21	$10.53
9.5			$10.29	$10.63	$10.97
10.0			$10.71	$11.06	$11.41
10.5			$11.13	$11.49	$11.85
11.0				$11.92	$12.28
11.5				$12.35	$12.72
12.0				$12.77	$13.16
12.5				$13.20	$13.59
13.0				$13.63	$14.03
13.5					$14.47
14.0					$14.90
14.5					$15.34
15.0					$15.78
15.5					$16.22

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) PRINCE GEORGE REGION ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$2.22									
1.1	$2.45	$2.53								
1.3	$2.68	$2.76	$2.83							
1.5	$2.91	$2.99	$3.07	$3.15						
1.7	$3.14	$3.22	$3.30	$3.38	$3.46					
1.9	$3.37	$3.45	$3.53	$3.62	$3.70	$3.78				
2.1	$3.60	$3.68	$3.77	$3.85	$3.93	$4.02				
2.3	$3.83	$3.91	$4.00	$4.09	$4.17	$4.26				
2.5	$4.06	$4.15	$4.23	$4.32	$4.41	$4.49	$4.67			
2.7	$4.29	$4.38	$4.47	$4.56	$4.64	$4.73	$4.91			
2.9		$4.61	$4.70	$4.79	$4.88	$4.97	$5.15			
3.1		$4.84	$4.93	$5.03	$5.12	$5.21	$5.39	$5.57		
3.3			$5.17	$5.26	$5.35	$5.45	$5.63	$5.82		
3.5				$5.50	$5.59	$5.69	$5.87	$6.06		
3.7				$5.73	$5.83	$5.92	$6.12	$6.30		
3.9					$6.06	$6.16	$6.36	$6.55		
4.1					$6.30	$6.40	$6.60	$6.79	$7.04	
4.3					$6.54	$6.64	$6.84	$7.04	$7.28	
4.5						$6.88	$7.08	$7.28	$7.53	
4.7						$7.12	$7.32	$7.53	$7.78	$8.03
4.9						$7.35	$7.57	$7.77	$8.03	$8.28
5.1							$7.81	$8.02	$8.28	$8.54
5.3							$8.05	$8.26	$8.53	$8.79
5.5							$8.29	$8.51	$8.78	$9.04
5.7							$8.53	$8.75	$9.02	$9.29
5.9								$9.00	$9.27	$9.54
6.1								$9.24	$9.52	$9.80
6.3								$9.49	$9.77	$10.05
6.5									$10.02	$10.30
6.7									$10.27	$10.55
6.9									$10.52	$10.81
7.1									$10.76	$11.06
7.3									$11.01	$11.31
7.5										$11.56
7.7										$11.81
7.9										$12.07

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) PRINCE GEORGE REGION OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)				
	10	20	30	40	50
1.0	$1.95				
1.3	$2.18	$2.25			
1.6	$2.41	$2.49	$2.57		
1.9	$2.63	$2.72	$2.80	$2.88	
2.2	$2.86	$2.95	$3.03	$3.12	$3.20
2.5	$3.09	$3.18	$3.27	$3.35	$3.44
2.8	$3.32	$3.41	$3.50	$3.59	$3.68
3.1	$3.55	$3.64	$3.73	$3.83	$3.92
3.4	$3.78	$3.87	$3.97	$4.06	$4.16
3.7		$4.10	$4.20	$4.30	$4.40
4.0		$4.33	$4.43	$4.53	$4.63
4.3		$4.56	$4.67	$4.77	$4.87
4.6			$4.90	$5.01	$5.11
4.9			$5.14	$5.24	$5.35
5.2			$5.37	$5.48	$5.59
5.5			$5.60	$5.72	$5.83
5.8				$5.95	$6.07
6.1					$6.31
6.4					$6.55

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)				
	60	80	100	125	150
2.5	$4.37				
3.0	$4.77	$4.95			
3.5	$5.17	$5.36	$5.55		
4.0	$5.58	$5.77	$5.97		
4.5	$5.98	$6.18	$6.39	$6.63	
5.0	$6.38	$6.59	$6.80	$7.06	
5.5	$6.78	$7.00	$7.22	$7.49	$7.75
6.0	$7.19	$7.41	$7.64	$7.92	$8.19
6.5	$7.59	$7.83	$8.06	$8.35	$8.63
7.0	$7.99	$8.24	$8.48	$8.77	$9.07
7.5	$8.39	$8.65	$8.90	$9.20	$9.50
8.0		$9.06	$9.31	$9.63	$9.94
8.5		$9.47	$9.73	$10.06	$10.38
9.0		$9.88	$10.15	$10.49	$10.81
9.5			$10.57	$10.91	$11.25
10.0			$10.99	$11.34	$11.69
10.5			$11.41	$11.77	$12.13
11.0				$12.20	$12.56
11.5				$12.63	$13.00
12.0				$13.05	$13.44
12.5				$13.48	$13.87
13.0				$13.91	$14.31
13.5					$14.75
14.0					$15.18
14.5					$15.62
15.0					$16.06
15.5					$16.50

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) PRINCE RUPERT REGION ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$2.69									
1.1	$2.92	$3.00								
1.3	$3.15	$3.23	$3.30							
1.5	$3.38	$3.46	$3.54	$3.62						
1.7	$3.61	$3.69	$3.77	$3.85	$3.93					
1.9	$3.84	$3.92	$4.00	$4.09	$4.17	$4.25				
2.1	$4.07	$4.15	$4.24	$4.32	$4.40	$4.49				
2.3	$4.30	$4.38	$4.47	$4.56	$4.64	$4.73				
2.5	$4.53	$4.62	$4.70	$4.79	$4.88	$4.96	$5.14			
2.7	$4.76	$4.85	$4.94	$5.03	$5.11	$5.20	$5.38			
2.9		$5.08	$5.17	$5.26	$5.35	$5.44	$5.62			
3.1		$5.31	$5.40	$5.50	$5.59	$5.68	$5.86	$6.04		
3.3			$5.64	$5.73	$5.82	$5.92	$6.10	$6.29		
3.5				$5.97	$6.06	$6.16	$6.34	$6.53		
3.7				$6.20	$6.30	$6.39	$6.59	$6.77		
3.9					$6.53	$6.63	$6.83	$7.02		
4.1					$6.77	$6.87	$7.07	$7.26	$7.51	
4.3					$7.01	$7.11	$7.31	$7.51	$7.75	
4.5						$7.35	$7.55	$7.75	$8.00	
4.7						$7.59	$7.79	$8.00	$8.25	$8.50
4.9						$7.82	$8.04	$8.24	$8.50	$8.75
5.1							$8.28	$8.49	$8.75	$9.01
5.3							$8.52	$8.73	$9.00	$9.26
5.5							$8.76	$8.98	$9.25	$9.51
5.7							$9.00	$9.22	$9.49	$9.76
5.9								$9.47	$9.74	$10.01
6.1								$9.71	$9.99	$10.27
6.3								$9.96	$10.24	$10.52
6.5									$10.49	$10.77
6.7									$10.74	$11.02
6.9									$10.99	$11.28
7.1									$11.23	$11.53
7.3									$11.48	$11.78
7.5										$12.03
7.7										$12.28
7.9										$12.54

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) PRINCE RUPERT REGION OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 10	20	30	40	50
1.0	$2.42				
1.3	$2.57	$2.72			
1.6	$2.80	$2.96	$3.04		
1.9	$3.04	$3.19	$3.27	$3.35	
2.2	$3.27	$3.42	$3.50	$3.59	$3.67
2.5	$3.50	$3.65	$3.74	$3.82	$3.91
2.8	$3.73	$3.88	$3.97	$4.06	$4.15
3.1	$3.96	$4.11	$4.20	$4.30	$4.39
3.4	$4.19	$4.34	$4.44	$4.53	$4.63
3.7		$4.57	$4.67	$4.77	$4.87
4.0		$4.80	$4.90	$5.00	$5.10
4.3		$5.03	$5.14	$5.24	$5.34
4.6			$5.37	$5.48	$5.58
4.9			$5.61	$5.71	$5.82
5.2			$5.84	$5.95	$6.06
5.5			$6.07	$6.19	$6.30
5.8				$6.42	$6.54
6.1					$6.78
6.4					$7.02

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 60	80	100	125	150
2.5	$4.00				
3.0	$4.40	$4.58			
3.5	$4.80	$4.99	$5.18		
4.0	$5.20	$5.40	$5.59		
4.5	$5.61	$5.81	$6.01	$6.26	
5.0	$6.01	$6.22	$6.43	$6.69	
5.5	$6.41	$6.63	$6.85	$7.12	$7.38
6.0	$6.81	$7.04	$7.27	$7.55	$7.82
6.5	$7.21	$7.45	$7.69	$7.97	$8.26
7.0	$7.62	$7.86	$8.10	$8.40	$8.69
7.5	$8.02	$8.27	$8.52	$8.83	$9.13
8.0		$8.68	$8.94	$9.26	$9.57
8.5		$9.09	$9.36	$9.68	$10.00
9.0		$9.50	$9.78	$10.11	$10.44
9.5			$10.20	$10.54	$10.88
10.0			$10.61	$10.97	$11.32
10.5			$11.03	$11.40	$11.75
11.0				$11.82	$12.19
11.5				$12.25	$12.63
12.0				$12.68	$13.06
12.5				$13.11	$13.50
13.0				$13.54	$13.94
13.5					$14.37
14.0					$14.81
14.5					$15.25
15.0					$15.69
15.5					$16.12

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) INTERIOR AVERAGE ON HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.)									
	10	20	30	40	50	60	80	100	125	150
0.9	$2.25									
1.1	$2.48	$2.55								
1.3	$2.71	$2.78	$2.86							
1.5	$2.94	$3.02	$3.09	$3.17						
1.7	$3.17	$3.25	$3.33	$3.41	$3.49					
1.9	$3.40	$3.48	$3.56	$3.64	$3.72	$3.81				
2.1	$3.62	$3.71	$3.79	$3.88	$3.96	$4.04				
2.3	$3.85	$3.94	$4.03	$4.11	$4.20	$4.28				
2.5	$4.08	$4.17	$4.26	$4.35	$4.43	$4.52	$4.69			
2.7	$4.31	$4.40	$4.49	$4.58	$4.67	$4.76	$4.93			
2.9		$4.63	$4.73	$4.82	$4.91	$5.00	$5.18			
3.1		$4.87	$4.96	$5.05	$5.14	$5.24	$5.42	$5.60		
3.3			$5.19	$5.29	$5.38	$5.47	$5.66	$5.84		
3.5				$5.52	$5.62	$5.71	$5.90	$6.09		
3.7				$5.76	$5.85	$5.95	$6.14	$6.33		
3.9					$6.09	$6.19	$6.38	$6.58		
4.1					$6.33	$6.43	$6.62	$6.82	$7.06	
4.3					$6.56	$6.66	$6.87	$7.07	$7.31	
4.5						$6.90	$7.11	$7.31	$7.56	
4.7						$7.14	$7.35	$7.55	$7.81	$8.06
4.9						$7.38	$7.59	$7.80	$8.06	$8.31
5.1							$7.83	$8.04	$8.30	$8.56
5.3							$8.07	$8.29	$8.55	$8.81
5.5							$8.32	$8.53	$8.80	$9.07
5.7							$8.56	$8.78	$9.05	$9.32
5.9								$9.02	$9.30	$9.57
6.1								$9.27	$9.55	$9.82
6.3								$9.51	$9.80	$10.08
6.5									$10.04	$10.33
6.7									$10.29	$10.58
6.9									$10.54	$10.83
7.1									$10.79	$11.08
7.3									$11.04	$11.34
7.5										$11.59
7.7										$11.84
7.9										$12.09

* NOTE: Cycle time includes load and unload activities.

LOG TRUCK-HAUL COSTS ($/m3) INTERIOR AVERAGE

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 10	20	30	40	50
1.0	$1.98				
1.3	$2.19	$2.28			
1.6	$2.42	$2.51	$2.59		
1.9	$2.65	$2.74	$2.82	$2.91	
2.2	$2.88	$2.97	$3.06	$3.14	$3.23
2.5	$3.10	$3.20	$3.29	$3.38	$3.47
2.8	$3.33	$3.44	$3.53	$3.62	$3.71
3.1	$3.56	$3.67	$3.76	$3.85	$3.94
3.4	$3.79	$3.90	$3.99	$4.09	$4.18
3.7		$4.13	$4.23	$4.32	$4.42
4.0		$4.36	$4.46	$4.56	$4.66
4.3		$4.59	$4.69	$4.80	$4.90
4.6			$4.93	$5.03	$5.14
4.9			$5.16	$5.27	$5.38
5.2			$5.40	$5.51	$5.62
5.5			$5.63	$5.74	$5.85
5.8				$5.98	$6.09
6.1					$6.33
6.4					$6.57

OFF HIGHWAY

CYCLE TIME* (hr.)	ONE WAY HAUL DISTANCE (km.) 60	80	100	125	150
2.5	$4.06				
3.0	$4.46	$4.64			
3.5	$4.86	$5.05	$5.24		
4.0	$5.27	$5.46	$5.66		
4.5	$5.67	$5.87	$6.07	$6.32	
5.0	$6.07	$6.28	$6.49	$6.75	
5.5	$6.47	$6.69	$6.91	$7.18	$7.44
6.0	$6.87	$7.10	$7.33	$7.61	$7.88
6.5	$7.28	$7.51	$7.75	$8.04	$8.32
7.0	$7.68	$7.92	$8.17	$8.46	$8.75
7.5	$8.08	$8.33	$8.58	$8.89	$9.19
8.0		$8.75	$9.00	$9.32	$9.63
8.5		$9.16	$9.42	$9.75	$10.07
9.0		$9.57	$9.84	$10.17	$10.50
9.5			$10.26	$10.60	$10.94
10.0			$10.68	$11.03	$11.38
10.5			$11.09	$11.46	$11.81
11.0				$11.89	$12.25
11.5				$12.31	$12.69
12.0				$12.74	$13.13
12.5				$13.17	$13.56
13.0				$13.60	$14.00
13.5					$14.44
14.0					$14.87
14.5					$15.31
15.0					$15.75
15.5					$16.18

* NOTE: Cycle time includes load and unload activities.

5.2 Sample Results

The questionnaires received from each forest district provided site specific data which was used to calculate a series of delivered log costs for each sample. Each cost represents a unique combination of stand volume and tree size. These results are too voluminous to reproduce in this report but are available separately. For the purpose of illustration an example of an individual sample result is reproduced below:

DELIVERED WOOD COSTS

REGION: PRINCE GEORGE SAMPLE #: 25
STAND: Sx E Ba BLOCK:M
SLOPE: 15 TSA:Mackenzie
TRTMNT.: CHEMICAL B & W

	Average tree volume (m3)				
Average m3/ha.	0.25 ($/m3)	0.50 ($/m3)	0.75 ($/m3)	1.00 ($/m3)	1.25 ($/m3)
200	$25.58	$24.37	$23.28	$22.29	$21.42
300	$24.84	$23.63	$22.54	$21.56	$20.69
400	$24.09	$22.89	$21.79	$20.81	$19.94
500	$23.34	$22.13	$21.04	$20.05	$19.18
600	$22.58	$21.38	$20.28	$19.30	$18.43

On-hwy. truck haul distance 0 km.
Off-hwy truck haul distance 33 km.

Aggregations of the individual results were made by region and slope category. The resulting tables which follow resemble the general tables except that these results include all transportation costs and are the full estimate of delivered log costs.

5.21 Summary of Samples Received from Ministry of Forests District Offices

REGION: VANCOUVER

Distribution of samples by slope class:

0% - 10%	29
11% - 20%	7
21% - 35%	17
36% - 55%	26
56% up.	8
TOTAL	87 samples

Average haul distance:

highway :	28 km for 53 samples
off-highway :	35 km for 34 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 300 m3 per ha

Average dbh (cm)	SLOPE 0%	15%	30%	45%	60%
30	$35.32	$35.31	$38.27	$39.09	$40.53
40	$33.00	$33.24	$35.78	$36.31	$37.57
50	$31.05	$31.51	$33.66	$33.95	$35.09
60	$29.48	$30.14	$31.91	$32.04	$33.09
70	$28.29	$29.10	$30.53	$30.56	$31.58

STAND VOLUME = 400 m3 per ha

Average dbh (cm)	SLOPE 0%	15%	30%	45%	60%
30	$34.21	$34.30	$37.19	$37.82	$39.37
40	$32.00	$32.32	$34.81	$35.16	$36.54
50	$30.14	$30.68	$32.78	$32.91	$34.17
60	$28.65	$29.37	$31.11	$31.08	$32.26
70	$27.51	$28.40	$29.79	$29.66	$30.81

VANCOUVER REGION (Continued)

STAND VOLUME = 500 m3 per ha

Average dbh (cm)	SLOPE 0%	15%	30%	45%	60%
30	$33.28	$33.44	$36.28	$36.77	$38.36
40	$31.17	$31.57	$34.02	$34.23	$35.67
50	$29.41	$30.01	$32.08	$32.09	$33.41
60	$27.99	$28.77	$30.49	$30.34	$31.59
70	$26.91	$27.85	$29.23	$28.99	$30.20

STAND VOLUME = 600 m3 per ha

Average dbh (cm)	SLOPE 0%	15%	30%	45%	60%
30	$32.44	$32.67	$35.47	$35.84	$37.44
40	$30.44	$30.90	$33.31	$33.42	$34.87
50	$28.78	$29.42	$31.48	$31.38	$32.72
60	$27.43	$28.25	$29.96	$29.72	$30.99
70	$26.41	$27.38	$28.76	$28.44	$29.67

STAND VOLUME = 700 m3 per ha

Average dbh (cm)	SLOPE 0%	15%	30%	45%	60%
30	$31.65	$31.94	$34.70	$34.97	$36.56
40	$29.77	$30.27	$32.66	$32.68	$34.12
50	$28.19	$28.88	$30.92	$30.74	$32.08
60	$26.92	$27.78	$29.48	$29.16	$30.44
70	$25.96	$26.96	$28.35	$27.94	$29.19

REGION: CARIBOO

Distribution of samples by slope class:

0% - 15%	20
16% - 25%	7
26% - 35%	5
36% - 45%	1
46% up.	1
TOTAL	34 samples

Average haul distance:

highway :	71 km	for 33 samples
off-highway :	37 km	for 1 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 200 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.51	$26.37	$27.19	$28.38	$29.32
0.50	$24.24	$25.10	$25.92	$27.11	$28.04
0.75	$23.08	$23.95	$24.77	$25.95	$26.89
1.00	$22.05	$22.91	$23.73	$24.92	$25.86
1.25	$21.13	$22.00	$22.82	$24.00	$24.94

STAND VOLUME = 300 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.70	$25.56	$26.29	$27.49	$28.28
0.50	$23.43	$24.29	$25.02	$26.22	$27.01
0.75	$22.27	$23.14	$23.87	$25.07	$25.86
1.00	$21.24	$22.10	$22.84	$24.03	$24.83
1.25	$20.32	$21.19	$21.92	$23.12	$23.91

CARIBOO REGION (Continued)

STAND VOLUME = 400 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$23.90	$24.76	$25.45	$26.65	$27.37
0.50	$22.62	$23.48	$24.17	$25.38	$26.10
0.75	$21.47	$22.33	$23.02	$24.23	$24.94
1.00	$20.44	$21.30	$21.99	$23.19	$23.91
1.25	$19.52	$20.38	$21.07	$22.28	$22.99

STAND VOLUME = 500 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$23.09	$23.95	$24.62	$25.82	$26.50
0.50	$21.82	$22.68	$23.34	$24.55	$25.23
0.75	$20.67	$21.53	$22.19	$23.40	$24.07
1.00	$19.63	$20.49	$21.16	$22.37	$23.04
1.25	$18.72	$19.58	$20.24	$21.45	$22.12

STAND VOLUME = 600 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$22.29	$23.15	$23.80	$25.01	$25.65
0.50	$21.02	$21.88	$22.52	$23.74	$24.38
0.75	$19.87	$20.73	$21.37	$22.58	$23.23
1.00	$18.83	$19.69	$20.34	$21.55	$22.19
1.25	$17.92	$18.78	$19.42	$20.63	$21.28

REGION: KAMLOOPS

Distribution of samples by slope class:

0% - 15%	32
16% - 25%	28
26% - 35%	13
36% - 45%	2
46% up.	1
TOTAL	76 samples

Average haul distance:

highway : 33 km for 76 samples
off-highway : 0 km for 0 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 200 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.30	$25.31	$26.03	$26.85	$28.86
0.50	$23.97	$23.98	$24.70	$25.51	$27.53
0.75	$22.76	$22.77	$23.49	$24.30	$26.31
1.00	$21.67	$21.68	$22.40	$23.21	$25.23
1.25	$20.71	$20.72	$21.44	$22.25	$24.27

STAND VOLUME = 300 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.38	$24.41	$25.05	$25.78	$27.55
0.50	$23.05	$23.08	$23.72	$24.44	$26.22
0.75	$21.84	$21.87	$22.51	$23.23	$25.01
1.00	$20.75	$20.78	$21.42	$22.15	$23.92
1.25	$19.79	$19.82	$20.46	$21.19	$22.96

KAMLOOPS REGION (Continued)

STAND VOLUME = 400 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$23.50	$23.54	$24.15	$24.83	$26.48
0.50	$22.17	$22.21	$22.81	$23.49	$25.15
0.75	$20.96	$21.00	$21.60	$22.28	$23.93
1.00	$19.87	$19.91	$20.51	$21.19	$22.85
1.25	$18.91	$18.95	$19.55	$20.23	$21.89

STAND VOLUME = 500 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$22.64	$22.69	$23.26	$23.92	$25.50
0.50	$21.30	$21.35	$21.93	$22.58	$24.17
0.75	$20.09	$20.14	$20.72	$21.37	$22.95
1.00	$19.01	$19.05	$19.63	$20.29	$21.87
1.25	$18.04	$18.09	$18.67	$19.32	$20.91

STAND VOLUME = 600 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$21.78	$21.83	$22.40	$23.03	$24.57
0.50	$20.45	$20.50	$21.06	$21.70	$23.23
0.75	$19.24	$19.29	$19.85	$20.49	$22.02
1.00	$18.15	$18.20	$18.76	$19.40	$20.94
1.25	$17.19	$17.24	$17.80	$18.44	$19.97

REGION: NELSON

Distribution of samples by slope class:

0% - 15%	31
16% - 25%	18
26% - 35%	12
36% - 45%	7
46% up.	1
TOTAL	69 samples

Average haul distance:

highway : 38 km for 49 samples
off-highway : 37 km for 20 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 200 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$26.94	$26.74	$27.49	$28.48	$29.27
0.50	$25.57	$25.37	$26.12	$27.11	$27.91
0.75	$24.33	$24.13	$24.88	$25.87	$26.67
1.00	$23.22	$23.02	$23.77	$24.76	$25.56
1.25	$22.24	$22.03	$22.79	$23.77	$24.57

STAND VOLUME = 300 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.97	$25.72	$26.38	$27.34	$27.94
0.50	$24.60	$24.35	$25.01	$25.97	$26.57
0.75	$23.36	$23.11	$23.77	$24.73	$25.33
1.00	$22.25	$22.00	$22.66	$23.62	$24.22
1.25	$21.27	$21.01	$21.68	$22.63	$23.23

NELSON REGION (Continued)

STAND VOLUME = 400 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.06	$24.77	$25.40	$26.34	$26.84
0.50	$23.69	$23.41	$24.03	$24.97	$25.47
0.75	$22.45	$22.17	$22.79	$23.73	$24.23
1.00	$21.34	$21.06	$21.68	$22.62	$23.12
1.25	$20.35	$20.07	$20.69	$21.63	$22.14

STAND VOLUME = 500 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.17	$23.87	$24.46	$25.39	$25.84
0.50	$22.80	$22.50	$23.10	$24.02	$24.47
0.75	$21.56	$21.26	$21.86	$22.78	$23.23
1.00	$20.45	$20.15	$20.74	$21.67	$22.12
1.25	$19.46	$19.16	$19.76	$20.69	$21.13

STAND VOLUME = 600 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$23.28	$22.97	$23.55	$24.48	$24.88
0.50	$21.92	$21.61	$22.19	$23.11	$23.51
0.75	$20.68	$20.37	$20.95	$21.87	$22.28
1.00	$19.56	$19.25	$19.83	$20.76	$21.16
1.25	$18.58	$18.27	$18.85	$19.77	$20.18

REGION: PRINCE GEORGE

Distribution of samples by slope class:

0% - 15%	45
16% - 25%	16
26% - 35%	1
36% - 45%	2
46% up.	0
TOTAL	64 samples

Average haul distance:

highway : 58 km for 37 samples
off-highway : 63 km for 27 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 200 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.77	$28.10	$24.12	$24.63	N/A
0.50	$24.57	$26.89	$22.91	$23.42	N/A
0.75	$23.47	$25.79	$21.81	$22.33	N/A
1.00	$22.49	$24.81	$20.83	$21.34	N/A
1.25	$21.62	$23.94	$19.96	$20.47	N/A

STAND VOLUME = 300 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.95	$27.30	$23.50	$23.84	N/A
0.50	$23.74	$26.09	$22.29	$22.63	N/A
0.75	$22.65	$24.99	$21.19	$21.54	N/A
1.00	$21.66	$24.01	$20.21	$20.56	N/A
1.25	$20.79	$23.14	$19.34	$19.69	N/A

PRINCE GEORGE REGION (Continued)

STAND VOLUME = 400 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.16	$26.52	$22.81	$23.07	N/A
0.50	$22.95	$25.31	$21.60	$21.86	N/A
0.75	$21.85	$24.21	$20.50	$20.77	N/A
1.00	$20.87	$23.23	$19.52	$19.78	N/A
1.25	$20.00	$22.36	$18.65	$18.91	N/A

STAND VOLUME = 500 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$23.38	$25.75	$22.09	$22.30	N/A
0.50	$22.17	$24.54	$20.88	$21.09	N/A
0.75	$21.07	$23.44	$19.79	$20.00	N/A
1.00	$20.09	$22.46	$18.80	$19.01	N/A
1.25	$19.22	$21.59	$17.93	$18.14	N/A

STAND VOLUME = 600 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$22.61	$24.98	$21.36	$21.54	N/A
0.50	$21.40	$23.77	$20.15	$20.33	N/A
0.75	$20.30	$22.67	$19.05	$19.23	N/A
1.00	$19.32	$21.69	$18.07	$18.25	N/A
1.25	$18.45	$20.82	$17.20	$17.38	N/A

REGION: PRINCE RUPERT

Distribution of samples by slope class:

0% - 15%	22
16% - 25%	2
26% - 35%	2
36% - 45%	1
46% up.	0
TOTAL	27 samples

Average haul distance:

highway : 31 km for 17 samples
off-highway : 51 km for 10 samples

Delivered Log Cost ($ per m3)

STAND VOLUME = 200 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$28.55	$27.72	$32.15	$26.75	N/A
0.50	$27.22	$26.38	$30.82	$25.41	N/A
0.75	$26.00	$25.17	$29.60	$24.20	N/A
1.00	$24.92	$24.08	$28.52	$23.12	N/A
1.25	$23.96	$23.12	$27.56	$22.16	N/A

STAND VOLUME = 300 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$27.16	$26.32	$29.63	$25.94	N/A
0.50	$25.82	$24.99	$28.30	$24.61	N/A
0.75	$24.61	$23.78	$27.09	$23.40	N/A
1.00	$23.52	$22.69	$26.00	$22.31	N/A
1.25	$22.56	$21.73	$25.04	$21.35	N/A

PRINCE RUPERT REGION (Continued)

STAND VOLUME = 400 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$26.04	$25.21	$27.96	$25.12	N/A
0.50	$24.70	$23.87	$26.62	$23.79	N/A
0.75	$23.49	$22.66	$25.41	$22.58	N/A
1.00	$22.40	$21.57	$24.32	$21.49	N/A
1.25	$21.44	$20.61	$23.36	$20.53	N/A

STAND VOLUME = 500 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$25.03	$24.20	$26.61	$24.29	N/A
0.50	$23.70	$22.86	$25.28	$22.96	N/A
0.75	$22.48	$21.65	$24.07	$21.75	N/A
1.00	$21.40	$20.57	$22.98	$20.66	N/A
1.25	$20.44	$19.61	$22.02	$19.70	N/A

STAND VOLUME = 600 m3 per ha

Avg tree vol. m3	SLOPE 10%	20%	30%	40%	50%
0.25	$24.08	$23.25	$25.44	$23.46	N/A
0.50	$22.74	$21.91	$24.10	$22.12	N/A
0.75	$21.53	$20.70	$22.89	$20.91	N/A
1.00	$20.45	$19.62	$21.80	$19.83	N/A
1.25	$19.49	$18.66	$20.84	$18.87	N/A

5.3 Comparison of Sample Results with General Cost Tables

Some variance between the sample results and the general cost results should be expected. The samples reflect specific conditions each having its own weight in the cost outcome, while the general costs are intended to portray average conditions.

A variance test was carried out to compare a series of randomly picked sample results with the general tables. Random tree size and slope values were used for each sample and the indicated delivered log cost compared with the corresponding value in the general table. Since the haul distance and towing or barging point of origin (where applicable) was known for each sample, the appropriate transportation cost was calculated and added to the tree-to-truck cost estimate read from the general tables. Thus a comparison of delivered log cost could be made between the samples and the general tables.

It was found that overall for all regions the general tables showed no variance with the samples. In the Vancouver region general results were 1.8 percent higher than the sample results and for interior regions general tables were lower by 0.8 percent. Individual variances ranged from 0.1 percent to 13.4 percent. Appendix III provides a table showing and summarizing the variances.

The results from the randomly chosen samples compare very closely with the general tables indicating that the general tables can be used with confidence.

APPENDIX I

BIBLIOGRAPHY OF SOURCE MATERIAL

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APPENDIX II

QUESTIONNAIRE

QUESTIONNAIRE

PART I IDENTIFICATION

Sample No.:_____

Region: _____ District: _____

TSA:_____ Supply Block: _____

Location: _____

Opening No.: _____

UTM Grid: _____

PART II FRDA TREATMENT DESCRIPTION (Please amend if incorrect)

History Record Key: _____

Treatment type: _____

No of trees planted: _____ Species: _____

PART III STAND DETAILS (Present Stand)

Existing stand type (species): _____

Stems per hectare: _____

PART III FUTURE HARVESTING

a) Logging Systems

If the stand now growing on this site was mature today, what mix of the following logging systems would provide the most efficient operating method?

Season:

Winter _____ % Summer _____ %

Method:

Selective _____ % Clearcut _____ %

Logging equipment

(i) Falling:

Hand Falling _____ %

Mechanical Falling _____ %

(ii) Yarding & Skidding:

Cable	_____ %
Soft Track Skidding	_____ %
Crawler Skidding	_____ %
Rubber Tired Line Skidder	_____ %
Rubber Tired Grapple Skidder	_____ %
Full Tree Processor	_____ %
Other (describe)	
_____	_____ %

b) Log Transportation Systems

How would logs be transported?

Highway Trucks _____ %

Off-Highway Trucks _____ %

Towing No.(from pp. 33-34 of appraisal manual) _____

Towing point of origin _____

_____

c) Road Development in the treated area

	check one
Area is already completely roaded.	☐
Area is partially roaded, or adjacent to an existing road.	☐
Area is undeveloped. No roads.	☐

If part or fully roaded, what is the length of maintained* road through or adjacent to the treated area? _____km.

* i.e. a road that will continue to be maintained in the foreseeable future.

Estimated average cost of road construction in the vicinity $_____/km

Estimated cost of major structures, e.g. bridges and large culverts within the treated area that would need to be constructed or replaced before the area can be logged. $_____

Ground Conditions: check one

dry ☐ Moist ☐ Wet ☐

d) Additional Pertinent Information

Please identify special conditions which may affect the cost of logging and delivering wood from the treated area (e.g. remoteness, rough terrain, lake tows, access road development), and estimate the cost effect on delivered wood.

_____

_____

_____

APPENDIX III

VARIANCE TEST
SAMPLE RESULTS vs GENERAL RESULTS

VARIANCE ANALYSIS

REGION	SAMPLE No.	SLOPE %	HAUL DIST km.	ON/ OFF HWY	TREE SIZE m3	STAND VOL m3/ha	SAMPLE COST $/m3	GENERAL COST $/m3	TRANSP COST $/m3	TOTAL GENERAL $/m3	VARI-ANCE $/m3	VARI-ANCE %
CARIBOO	5	2	29		0.50	300	22.04	18.00	4.11	22.11	0.07	0.3%
	15	10	40		0.25	400	22.94	18.47	4.66	23.13	0.19	0.8%
	236	15	43		0.50	200	23.42	18.80	4.76	23.56	0.14	0.6%
	251	20	101		1.00	300	22.26	15.79	7.65	23.44	1.18	5.0%
	253	50	98		1.00	400	23.91	16.80	7.50	24.30	0.39	1.6%
KAMLOOPS	67	10	18		0.50	500	20.42	17.70	3.30	21.00	0.58	2.8%
	75	10	33		1.00	400	19.96	16.38	4.01	20.39	0.43	2.1%
	313	20	26		0.25	500	22.25	19.02	3.68	22.70	0.45	2.0%
	327	10	33		1.25	400	19.42	15.42	4.01	19.43	0.01	0.1%
	331	15	45		1.25	200	20.76	17.78	4.58	22.36	1.60	7.2%
	344	30	40		1.00	500	20.14	16.11	4.34	20.45	0.31	1.5%
	347	5	46		0.50	400	23.00	18.67	4.63	23.30	0.30	1.3%
	349	30	24		1.00	400	19.56	17.14	3.58	20.72	1.16	5.6%
NELSON	86	10	26	off	1.25	200	22.51	18.31	3.24	21.55	0.96	4.3%
	95	10	28	off	1.00	500	21.28	15.85	3.44	19.29	1.99	9.4%
	96	20	27		0.25	600	22.26	18.59	3.61	22.20	0.06	0.3%
	97	10	20		0.50	200	23.45	21.64	3.29	24.93	1.48	5.9%
	355	40	12		1.25	600	17.67	15.17	2.91	18.08	0.41	2.3%
	361	10	52	off	1.00	300	24.56	17.95	4.78	22.73	1.83	7.5%
	374	0	53	off	0.75	500	24.08	16.97	4.93	21.90	2.18	9.1%
PR.GEORGE	23	5	55	off	0.25	300	26.69	19.40	5.48	24.88	1.81	6.8%
	25	15	33	off	0.75	200	23.28	18.33	4.19	22.52	0.76	3.3%
	268	10	71	off	1.25	400	22.77	14.25	6.47	20.72	2.05	9.0%
	271	25	155	off	0.75	600	28.73	14.32	10.57	24.89	3.84	13.4%
	279	10	55		0.75	500	19.98	15.20	5.23	20.43	0.45	2.2%
	283	25	67		1.00	500	19.99	14.20	5.82	20.02	0.03	0.1%
	297	0	43		0.25	300	23.08	19.40	4.65	24.05	0.97	4.0%
PR.RUPERT	109	0	23		1.25	300	20.55	16.09	4.18	20.27	0.28	1.4%
	112	25	28		0.75	400	21.77	17.04	4.41	21.45	0.32	1.5%
	135	10	41		1.25	500	18.36	14.01	5.03	19.04	0.68	3.6%
	139	30	42		0.75	400	22.39	17.81	5.08	22.89	0.50	2.2%
	140	10	70		0.75	300	25.23	18.14	6.44	24.58	0.65	2.6%
VANCOUVER	147	45	40		50	400	30.05	27.89	6.50	34.39	4.34	12.6%
	159	30	20		60	300	27.46	25.47	4.74	30.21	2.75	9.1%
	196	30	20		70	700	25.65	21.41	5.41	26.82	1.17	4.4%
	200	60	30	off	60	500	33.05	26.68	7.11	33.79	0.74	2.2%
	209	70	30	off	50	300	38.71	31.10	7.67	38.77	0.06	0.2%
	210	35	20	off	50	400	31.43	26.10	5.41	31.51	0.08	0.3%
	215	10	30	off	40	500	33.94	26.28	7.11	33.39	0.55	1.6%
	228	5	40	off	50	700	31.55	24.38	5.27	29.65	1.90	6.0%
	414	50	20	off	30	700	37.07	30.15	5.41	35.56	1.51	4.1%
AVERAGE ALL REGIONS							24.33	19.22	5.10	24.33	0.01	0.0%
VANCOUVER REGION							32.10	26.61	6.07	32.68	0.58	1.8%
INTERIOR REGIONS							22.15	17.15	4.83	21.98	0.17	0.8%